LINKSYS

STC INSTALLER BOOT CAMP

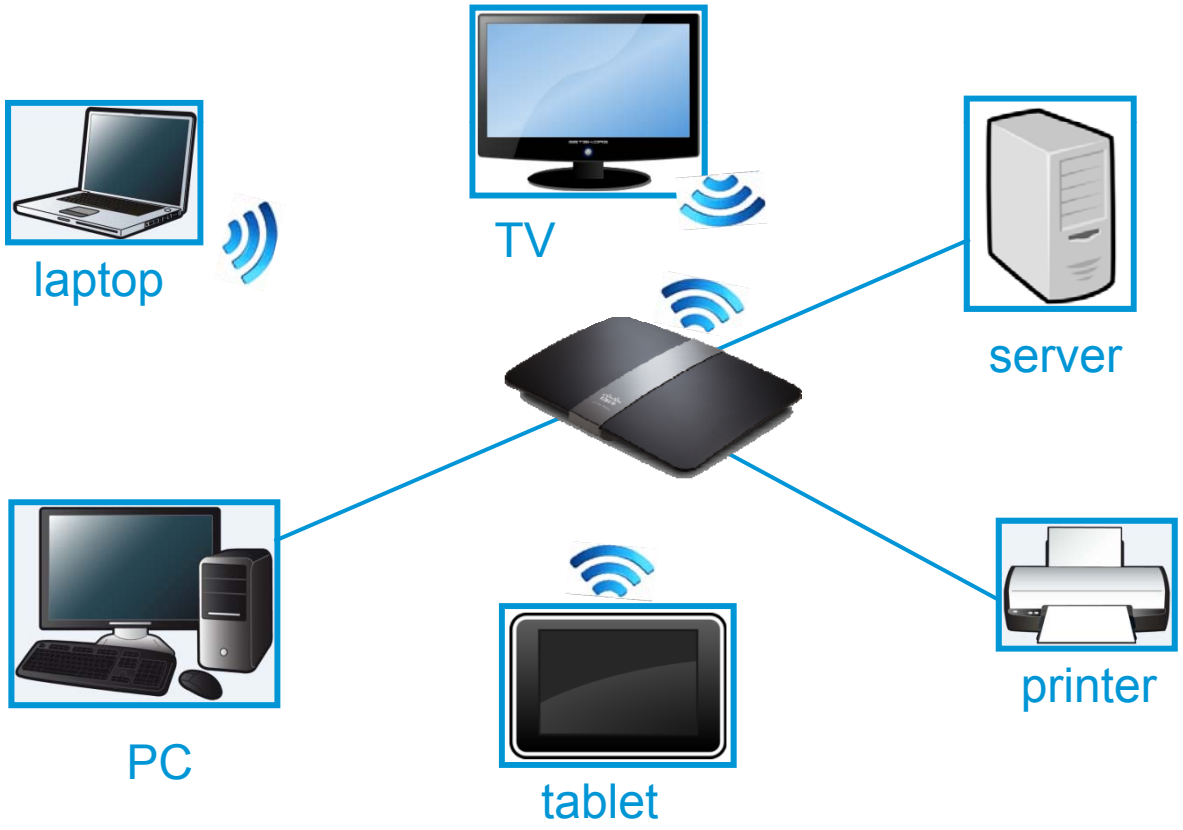
ZAFER MOHIUDDIN

LINKSYS

Module 1
Networking basics

What is a Network?

A network is a group of connected devices that enables users to share resources such as data, printers, and servers, tablets…



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Comparing Wired and Wireless LANs

- Relatively low cost
- Offers the highest performance possible
- Support for Gigabit speeds of 1000 Mbps

- Mobility and freedom - work anywhere
- No restriction of wires or a fixed connection
- Quick, effortless installation
- No cables to buy
- Save cabling time and hassle
- Easy to expand

Wired LANs

Wireless LANs

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Benefits of Networking

Connect Your PCs, Servers and Tech Toys

- **Share high-speed Internet connections**

  No more waiting in line to get online

- **Share files**

  No more carrying disks from office to office

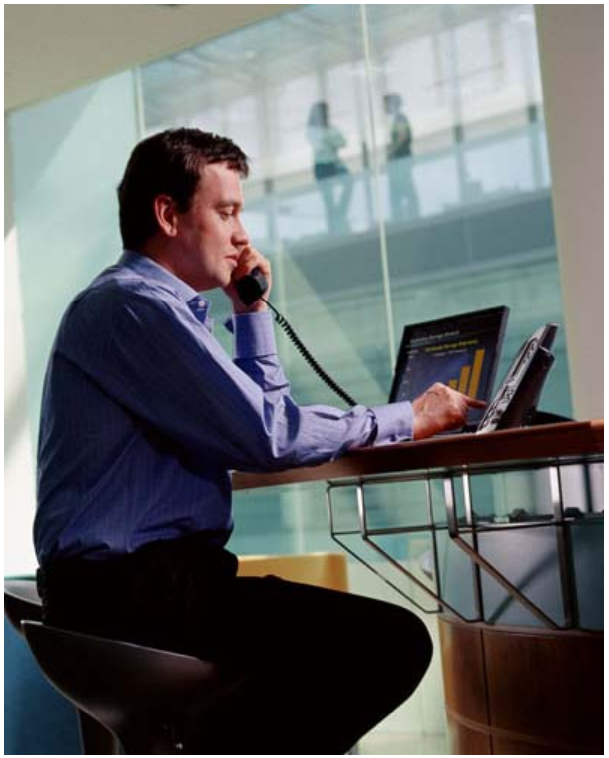
- **Share printers**

  Save money and time by sharing printers, scanners, and other peripherals

- **Share network storage**

- **Security**

  Protect your network resources from intruders or hackers



Connect ***Wirelessly*** to enjoy the freedom to work from anywhere!

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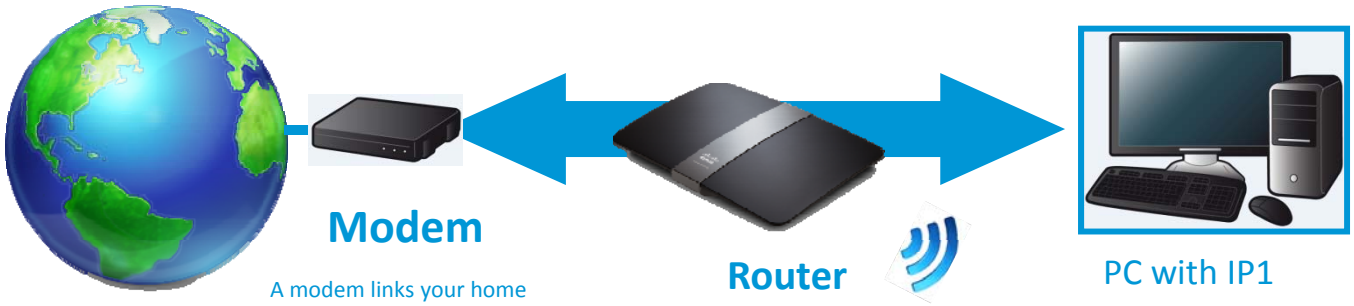
A Router Connect LANs and WANs

Two Types of Networks

WAN (Wide Area Network)

LAN (Local Area Network)



Modem

A modem links your home network to the Internet through your Internet Service Provider (ISP).

Router

(here, a Linksys EA6300)

A router is a device that forwards data from one network to another. It identifies how to send the packages to the right devices by giving an address (IP) to every single devices.

PC with IP1

Laptop with IP2

A Router connects a LAN to the Internet

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MAC Address

- **Each PC has a unique hardware address – MAC address**

  Each network device or card has a unique hardware address – MAC address (Layer 2)

  A MAC address looks like 98:FC:11:84:B1:60

- **On a typical network, each PC has a MAC address assigned during manufacturing**
- **Every MAC address is unique**
- **The MAC address is written on a label on the device.**

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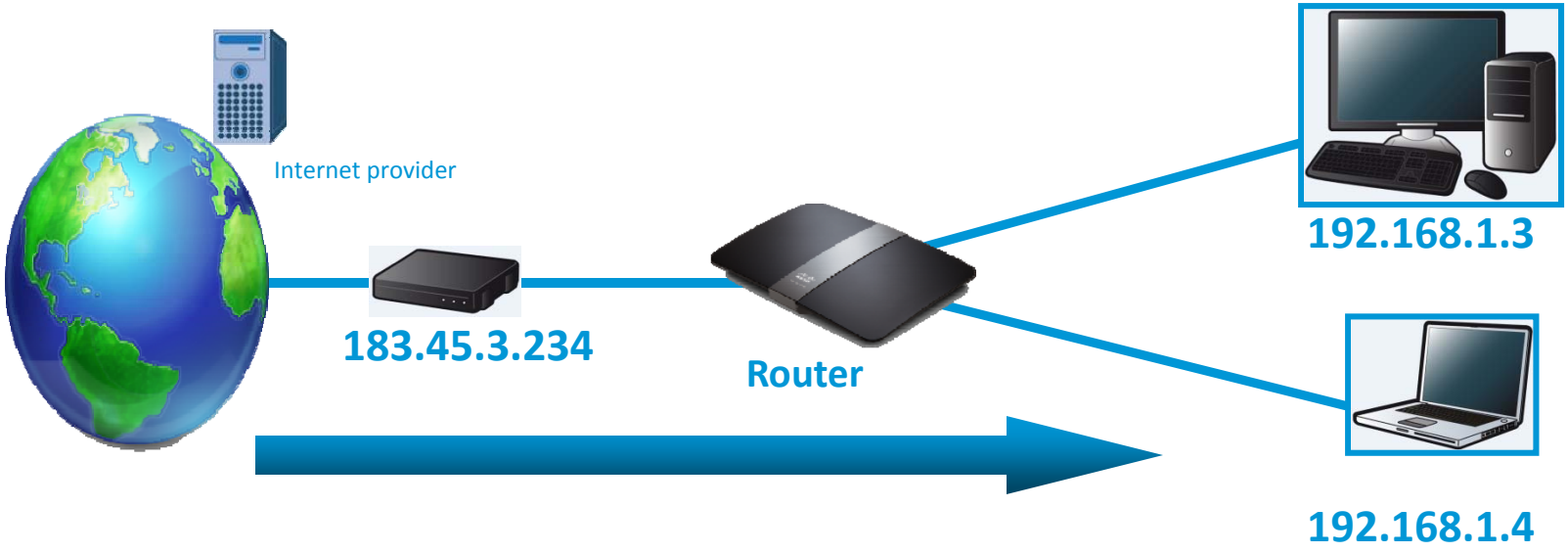
IP Address

- **Each PC has a unique software address – IP address**

  Each network device or card has a unique software address: an IP address.

  IP addresses look like 192.168.1.4 for IP version 4 and for the new IP version 6: 2607:f0d0:1002:51::4 (all of our routers are IPV6 compatible)

- **On a typical network, each PC has an IP address assigned statically or dynamically onsite**
- **IP addresses are unique on a customer's network**
- **NAT – Network Address Translation**



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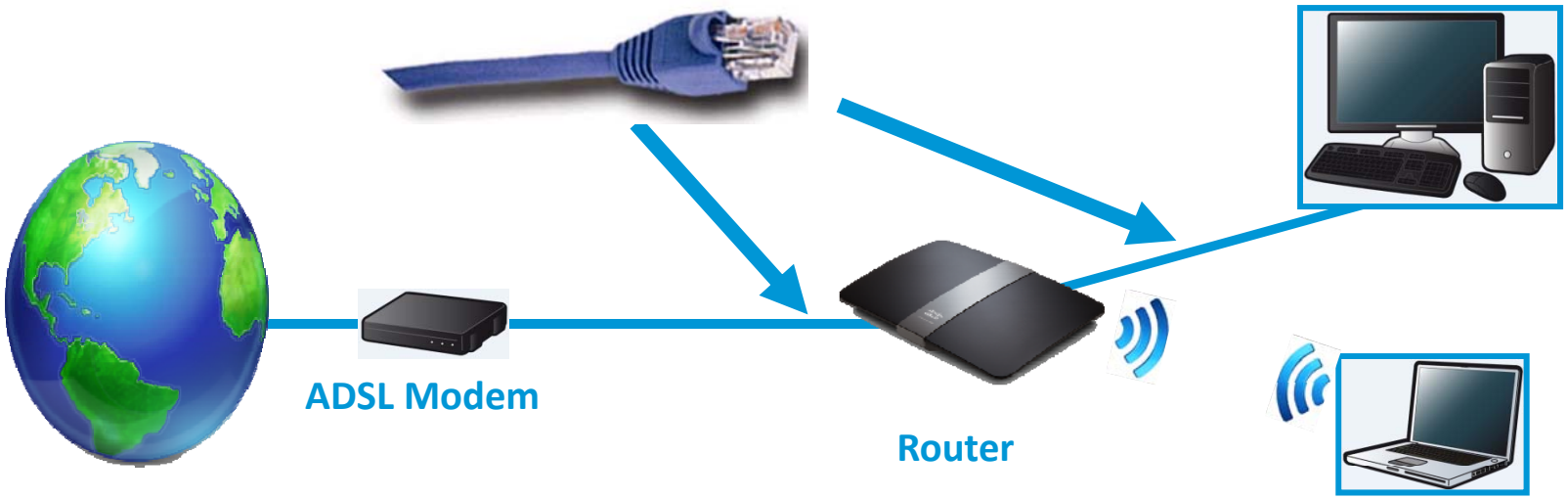
Wired and Wireless LANs Require Cables

- Previous to AC, wired network offered the fastest speeds possible. Now, with AC, your Wi/Fi network can run up to 1.3 Gbps.
- High-speed cable is available for transfer rates up to 1000 Mbps (10/100/1000 Mbps = up to 1 gigabit per second)

Networking cables are known by different names: Ethernet cable, RJ-45 (telephone wire is RJ-11), Category 5, CAT5, CAT6



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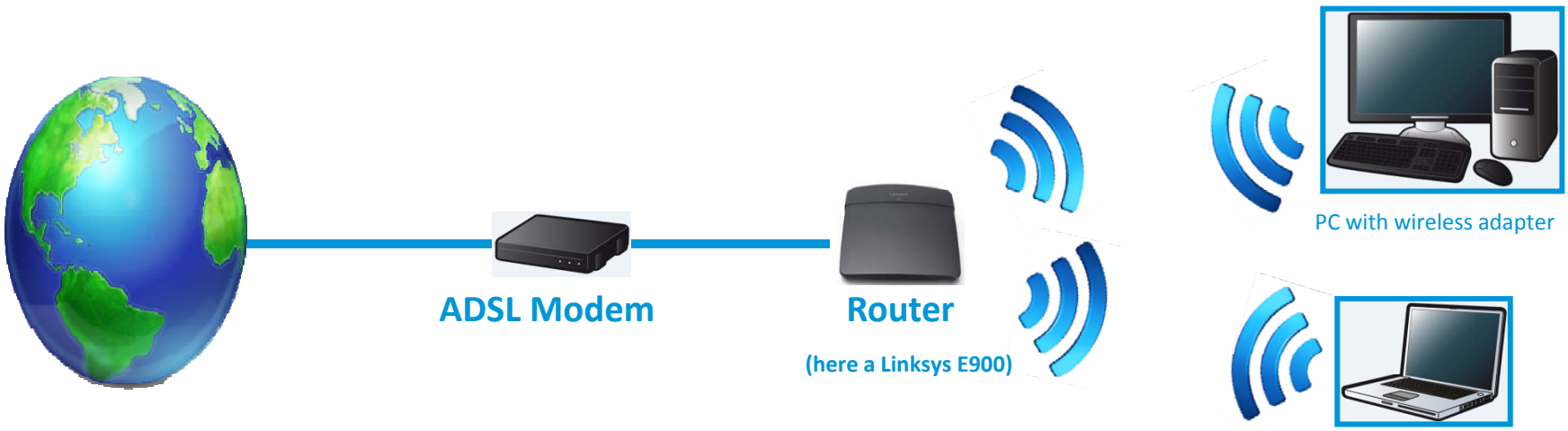
Wireless LAN Components

- **Wireless Router**
- Enables wireless-equipped computers and other devices to communicate
- Connects via **wired** connection to Modem

- **Wireless Adapter**
- Enables laptop and desktop PCs to communicate wirelessly
- All new laptops now have integrated wireless



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Dual Band Wireless Interference

- The air is getting more and more crowded
- Lots of interferences
- 2.4 GHz
- 5 GHz
- Customers need a Dual Band solution!

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Why Dual Band?

- Avoid the 2.4GHz jam now, take the 5 GHz Highway!

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Understanding dual band

2.4GHz Freeway

The Stadium Interchange as viewed from eastbound I-94/East-West Freeway in Milwaukee.

- Potential crowding
- 3 over lapping channels (lanes)

5GHz Freeway

- 19/20 non-overlapping useable channels (lanes)

- Select lanes (commuter) allow for higher power output providing potential for even greater range

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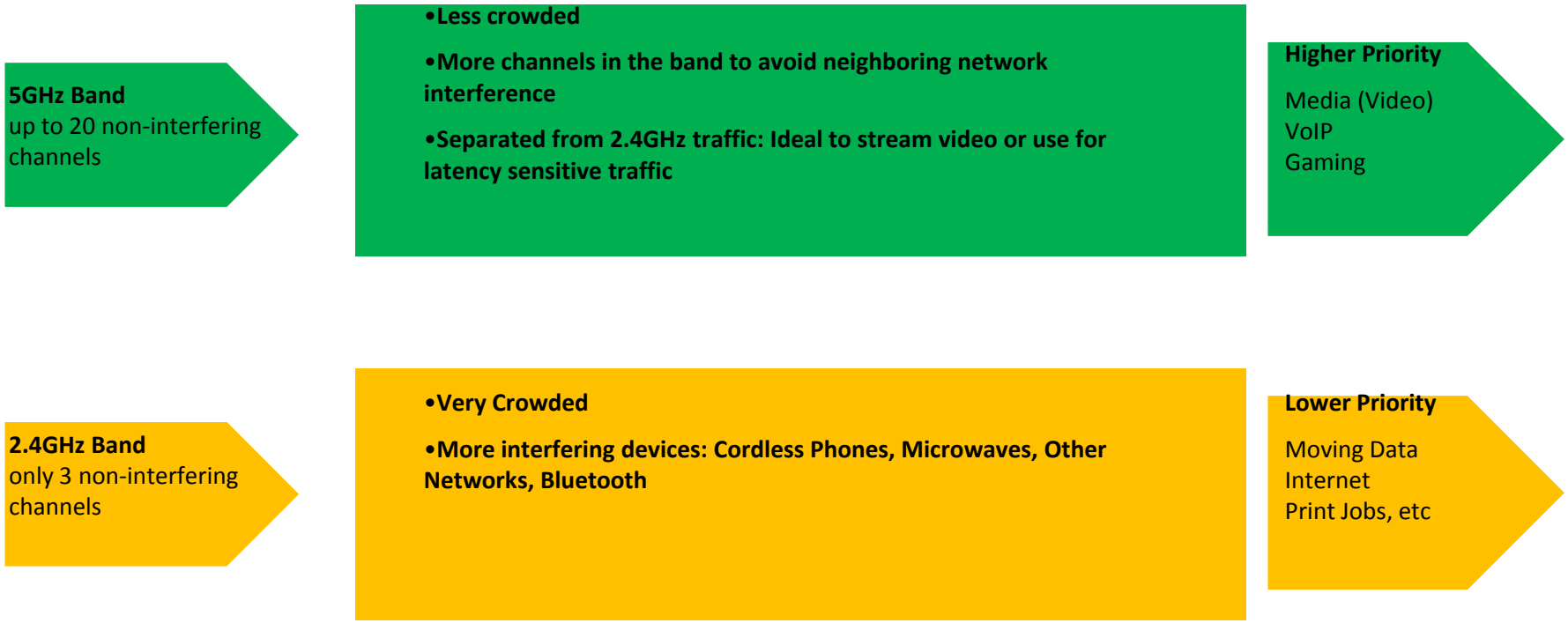
5GHz vs. 2.4GHz Network Operation



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Comparing wireless standards

WIRELESS STD	FREQUENCY	SPEED	INTEROPERABILITY
802.11	2.4 GHZ	2 MBPS	
802.11b	2.4 GHZ	11 MBPS	802.11, 802.11g
802.11a	5.0 GHZ	54 MBPS	
802.11g	2.4 GHZ	54 MBPS	802.11b
802.11n	2.4 GHZ/5GHZ DUAL BAND	450 MPBS	802.11a/b/g
802.11AC	5GHZ	1.3 GBPS	802.11 a/b/n

- **Pros of 2.4 GHz** - lowest cost; signal range is good and not easily obstructed
- **Cons of 2.4 Ghz** - slowest max speed; home appliances may interfere on the unregulated frequency band
- **Pros of 5 Ghz** - fast maximum speed; regulated frequencies prevent signal interference from other devices
- **Cons of 5 Ghz** - highest cost; shorter range signal that is more easily obstructed

Wireless Standards comparison

Wireless Standard	Wireless-G	Wireless-N	Wireless-AC
Solution Type	Outdated	Lowest price	Best Performance
Speed	Data rate up to 54Mbps	Up to 450 Mbps on 2.4 Ghz band and up to 450 Mbps on the 5Ghz band	Up to 3x faster than Wireless N on the 5Ghz band (1300Mbps)
Relative Cost	Super Cheap	Cheap	Best value
Frequency	2.4 GHz Band	2.4 & 5GHz Band	5Ghz band (most of the routers carry the 2.4Ghz band as well
Range	Typically up to 100-150 feet indoors. Range Expander option available	Up to 4X more range than Wireless-G	Up to 6X more range than Wireless-G
Performance Enhancements	Throughput up to 5X as fast as 802.11b	Up to 12X faster than Wireless-G	Up to 3x faster than Wireless-N
Compatibility	Backward compatible with Wireless-B (802.11b) and public Hotspots	Compatible with Wireless-B and –G networks. Reduced dead spots when used with any wireless standard	Compatible with Wireless-B, –G and N networks. Use the beamforming technology.
Router Security Options	WEP, WPA, WPA2, SPI Firewall	WEP, WPA, WAP2, SPI Firewall	WEP, WPA, WAP2, SPI Firewall

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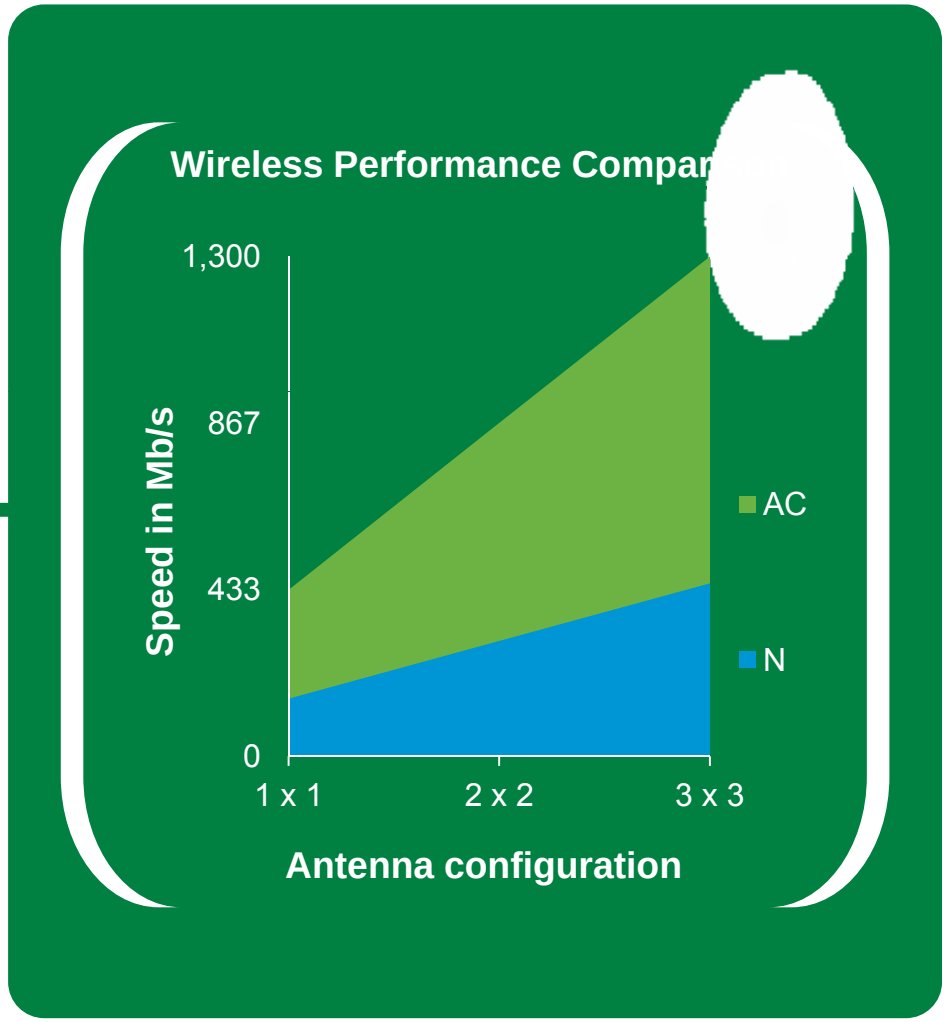
Why AC matters



Offers more bandwidth and is less impacted by interference

Allows you to do more at the same time, creating a better entertainment experience

Extends the battery life of mobile devices by achieving the same transfer speed more efficiently

AC products are compatible with all existing wireless clients

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802.11ac Coverage

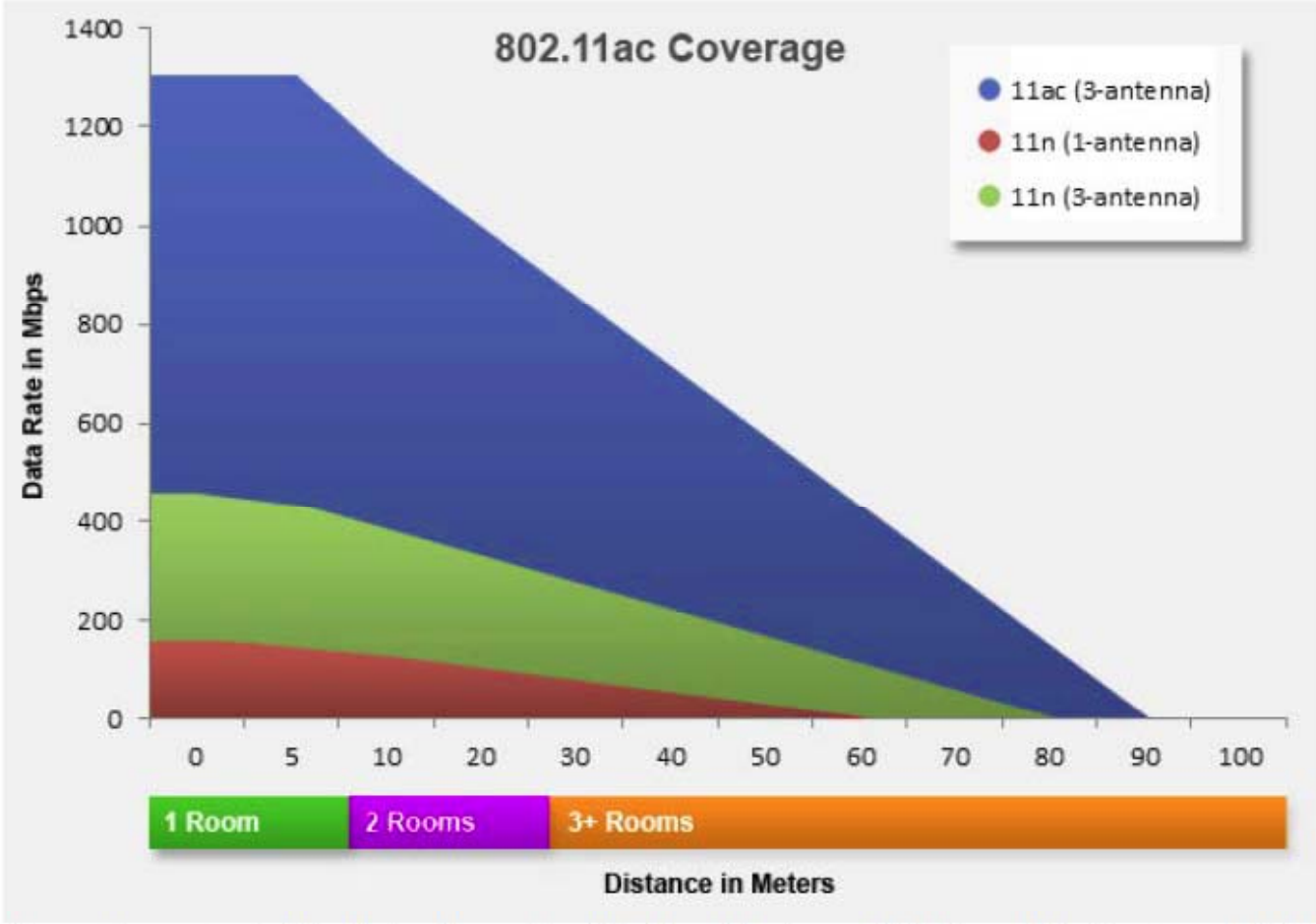

Figure: Approximate Data Rates (throughput) for 1 and 3 antenna 802.11n, and for 3-antenna 802.11ac

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Wireless Technology Comparison

Ideal for:	Wireless-G	Wireless-N	Wireless-AC
Sharing a high speed Internet connection	✓	✓	✓
Public hotspot compatibility	✓	✓	✓
Transmitting audio files	✓	✓	✓
Internet phone calls (VoIP)		✓	✓
Multiple users with heavy Internet usage or file sharing		✓	✓
Large homes and offices		✓	✓
Networked entertainment; streaming HD video, high definition video, multi-channel surround sound audio			✓
Multiple simultaneous applications including VoIP, audio, video			✓
Lag-free multi-player gaming over the wireless network			✓
Bandwidth-intensive network and multimedia applications			✓

Bandwidth

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LINSKYS SOLUTIONS TO IMPROVE INTERNET PERFORMANCE FOR STC CUSTOMERS

- RE2000 – WIRELESS N DUAL BAND RANGE EXTENDER + BRDIGE
- WAP300N – WIRELESS N DUAL BAND ACCESS POINT (4 IN 1)
- PLWK400 – WIRLESS N DUAL BAND POWERLINE
- EA6500 – WIRELESS AC DUAL BAND GIGABIT ROUTER WITH 2 USB

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REMEMBER THIS

- Support.linksys.com/productname
- Support.linksys.com/re2000
- Support.linksys.com/wap300n

- **ARABIC/ENGLISH TECHNICAL SUPPORT NO**

800 844 5905

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HOW DO I IMPORVE WIRELESS RANGE

- VIDEO

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RE2000

Selectable Dual-Band Wireless-N Range Expander

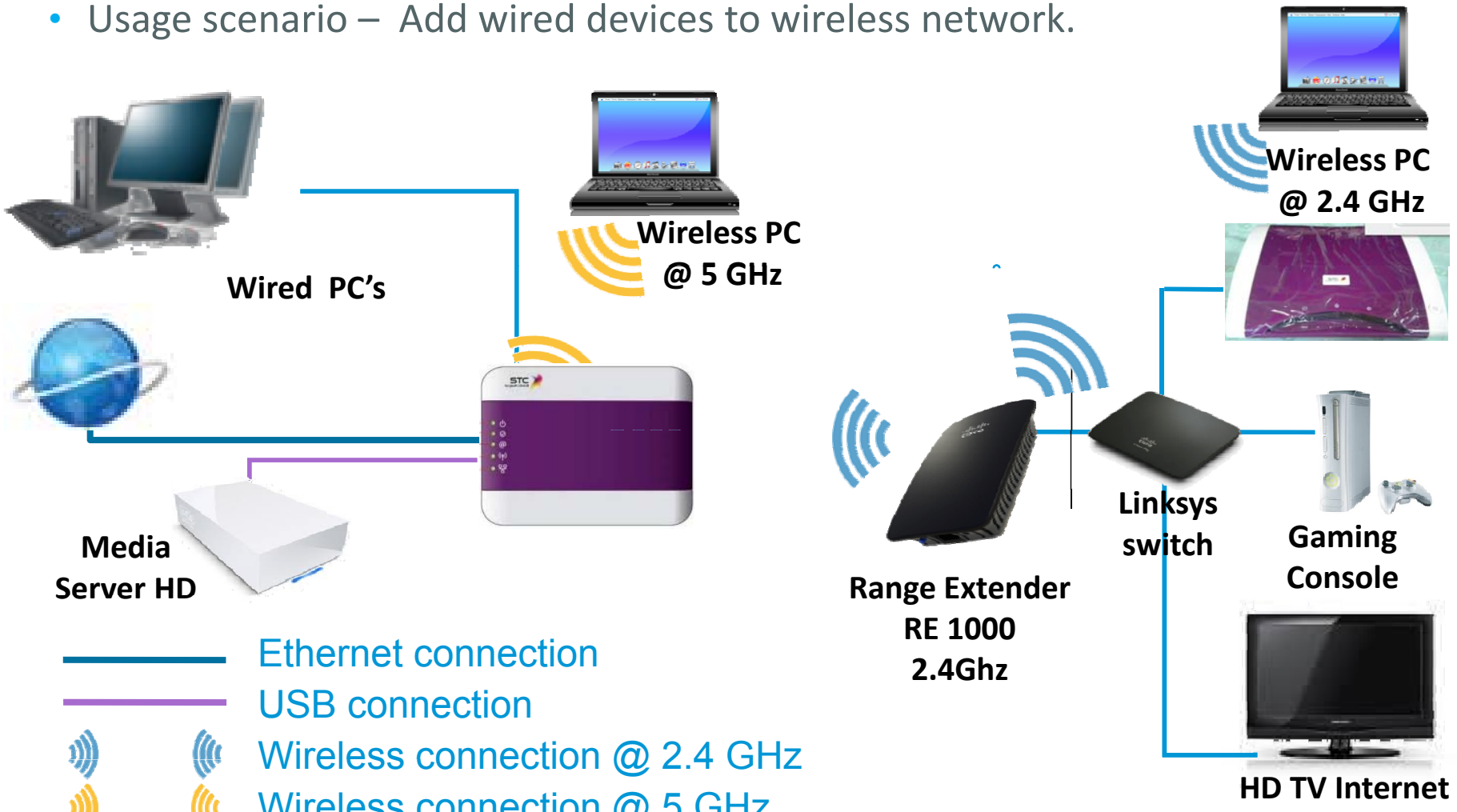
ZAFER MOHIUDDIN

Agenda

- Product Introduction
  - Hardware, Requirements and Product Comparison)
- LED
- General Hardware Summary
- Device Installation (Setup Software)
- Support Reminders

RE 1000 -Repeater and bridge.

- Usage scenario – Add wired devices to wireless network.



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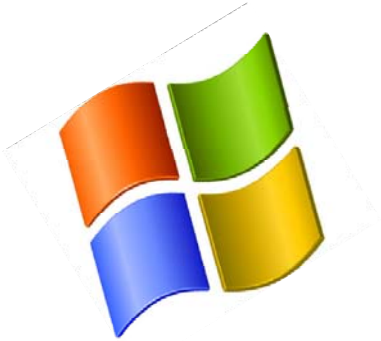
Hardware

- It can operate in either 2.4 GHz or 5.0 GHz radio bands (selectable dual-band)
- 802.11 a/b/g/n
- One 10/100 Fast Ethernet port
- 2T2R MIMO configuration
- Up to 300 Mbps per band
- Setup Wizard to connect extender to existing wireless network

Selectable Dual-Band Wireless-N Range Expander

OS Requirements (Setup Software)



Windows	Mac OS X
Windows XP SP3	Leopard 10.5.8 or later
Vista SP1	Snow Leopard 10.6.1 or later
Windows 7	Lion 10.7 or later
Windows 8	Mountain Lion 10.8 or later

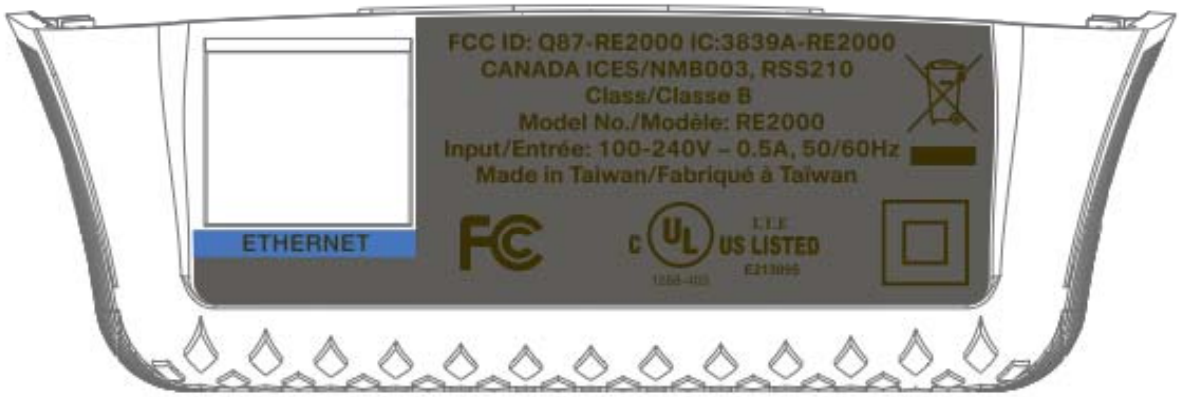
Product Comparison

	RE1000	RE2000
Dual Band	**No** (802.11 b/g/n)	**Yes** (802.11 a/b/g/n)
Data Rate	Up to 300Mbps	Up to 300Mbps (2.4GHz & 5GHz)
WPS	Yes	Yes
Built-in DHCP Survey	Yes	Yes
Default IP	192.168.1.1	192.168.1.1
LAN Port	1-10/100	1-10/100
LED	**Cisco logo LED**	**Cisco logo does not light up/LED is green bar**

LED

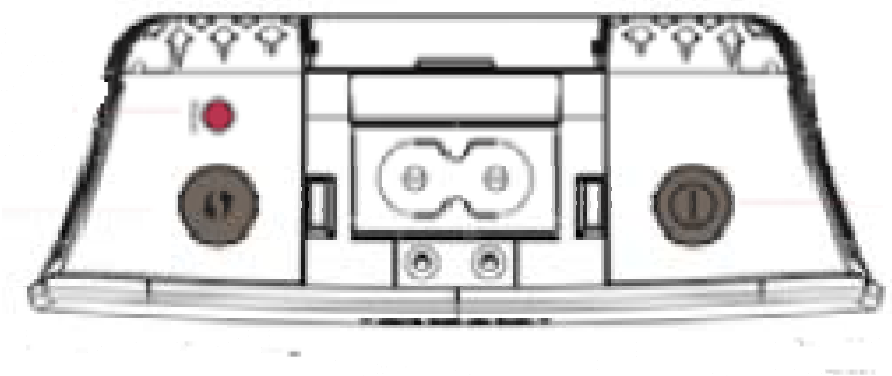
RE1000	RE1000 v1.5	RE2000
Cisco Logo is an LED	Single LED above the Cisco logo	RE2000 LED is now a green bar.

General Hardware Summary



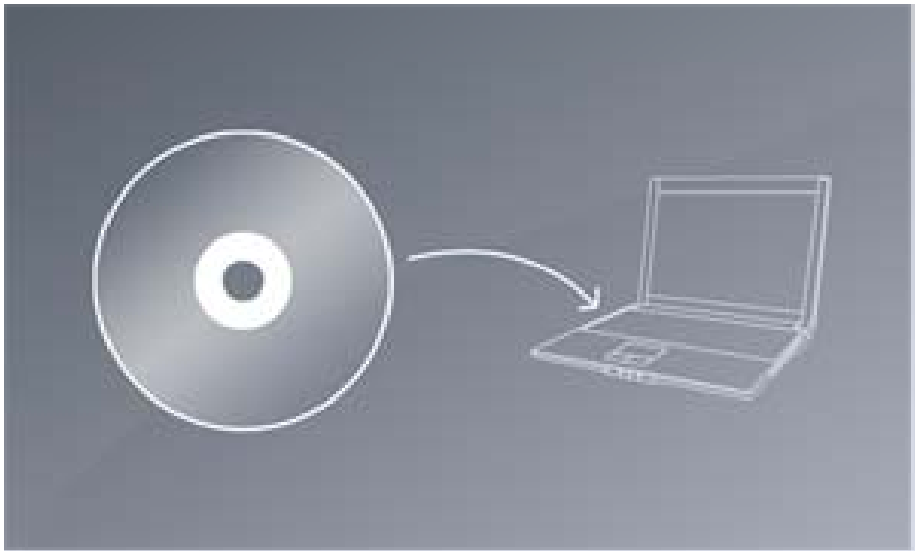
LED
One multi-purpose LED (green, bar shape) on the top of the device. This LED indicates the status of power, device boot-up and Wi-Fi Protected Setup
One integrated LED on the RJ45 (Ethernet/LAN) port for indicating the link status and activity of the port

General Hardware Summary



Physical Button	Power Supply
One push button for Wi-Fi Protected Setup. One reset button for resetting the device to factory settings. One power push button (for European model only).	Built-in power supply with worldwide voltage support (100-240V). Supports interchangeable power plug clip-on and pig-tail power cable. The type (US, EU, AU, UK) of clip-on(s) and cable(s) being shipped depends on the target country of the SKU.

Setup Software



- **The setup software is used to connect the RE2000 to an existing wireless network, allowing you to connect to a 2.4GHz or 5GHz network.**
- **It will not install any software on the local computer. The setup configuration wizard is the same as the RE1000**

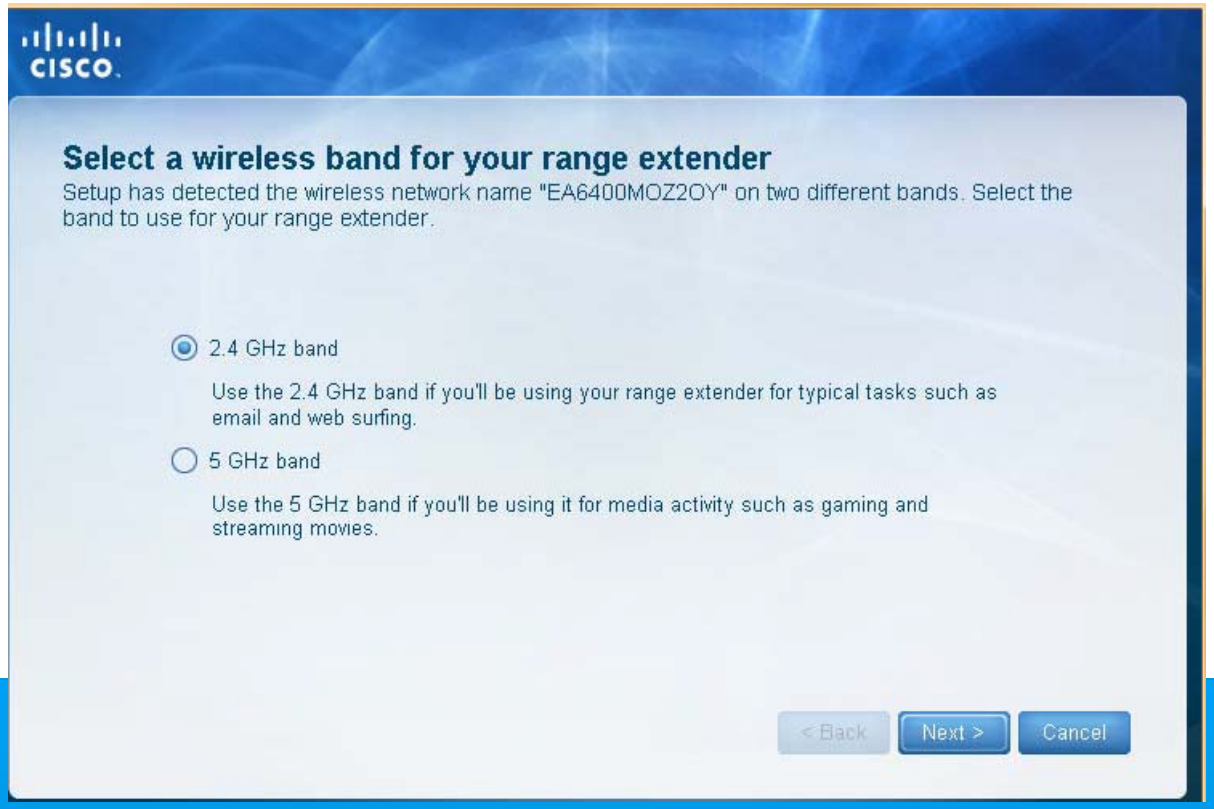
Setup Software

- **The Setup software can only run on a wireless computer (wireless adapter must be enabled) in order to scan for wireless networks. Same as the RE1000.**
- **If setup must be configured from a wired computer, simply access the UI to manually configure the extender.**

Setup Software

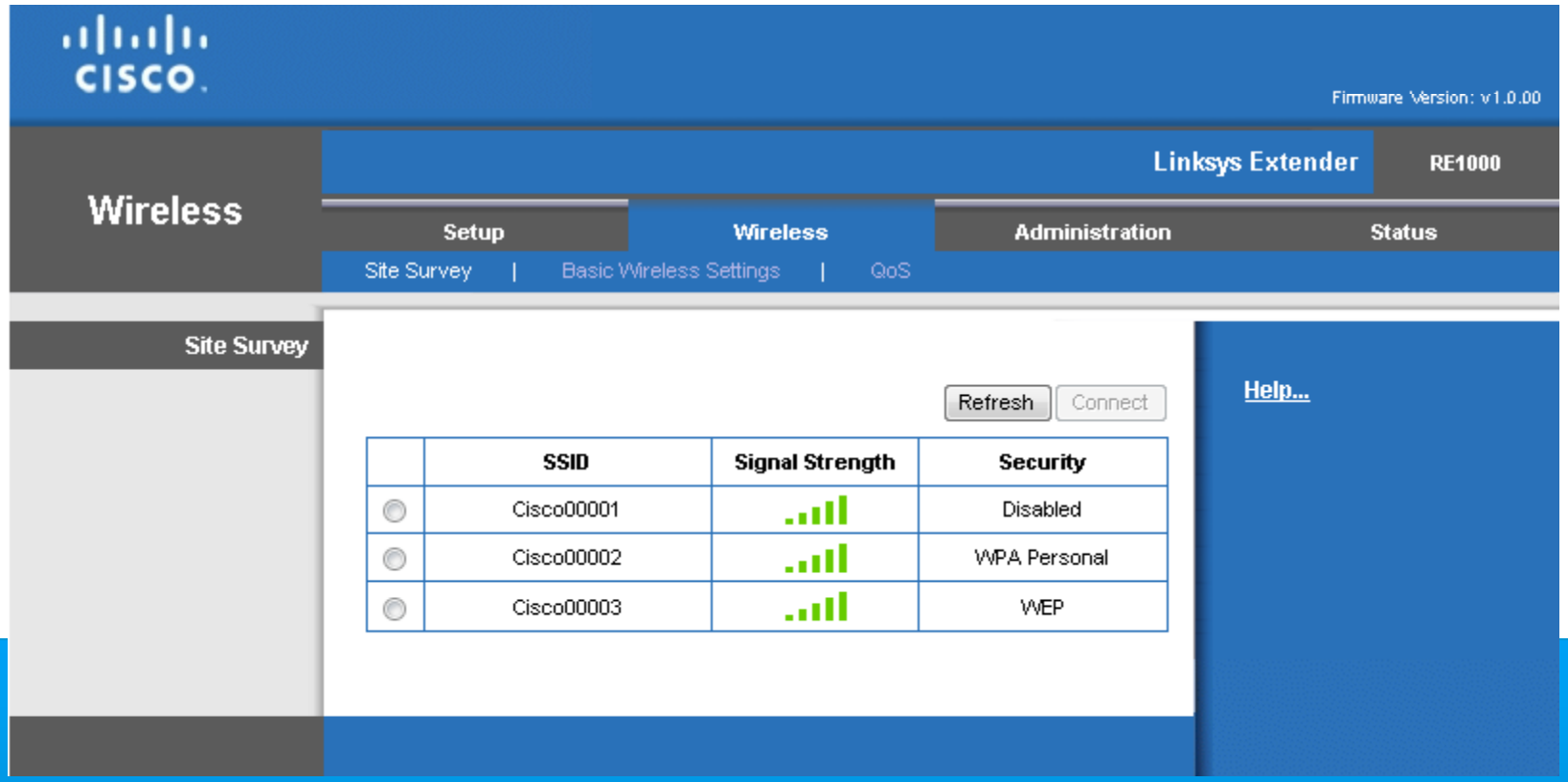
- **In a scenario where there is a dual band router or multiple SSID's with the same name but different bands, the setup software will display one SSID but will display 2.4GHz and 5GHz for the band information**

Setup Software


cisco
Select a wireless band for your range extender
Setup has detected the wireless network name "EA6400MOZ2OY" on two different bands. Select the band to use for your range extender.
2.4 GHz band
Use the 2.4 GHz band if you'll be using your range extender for typical tasks such as email and web surfing.
5 GHz band
Use the 5 GHz band if you'll be using it for media activity such as gaming and streaming movies.
< Back
Next >
Cancel

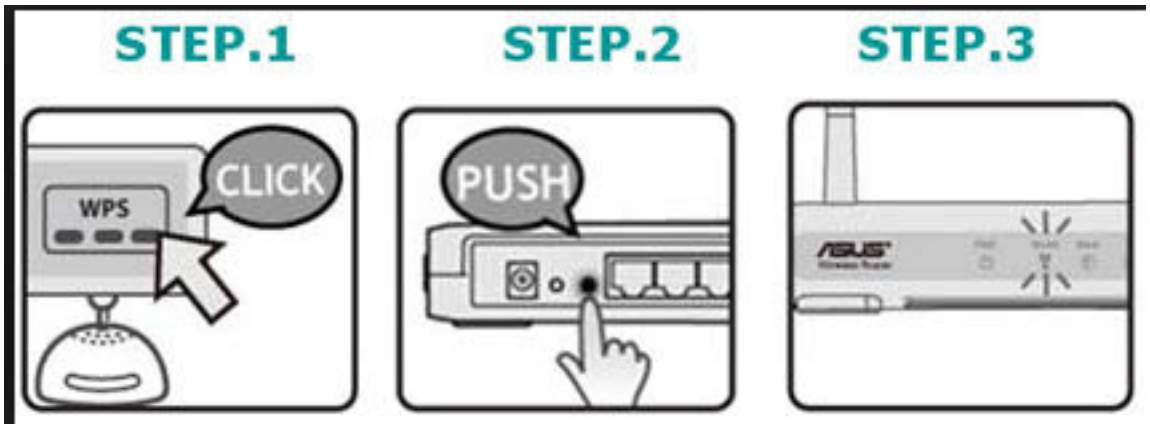
- **When you select the SSID, you will be given the option to select to which band you want the extender to connect to**.

UI Configuration



- **Same as RE1000 but the Site Survey page will now display 5GHz band networks**.

WPS (WIRELESS PROTECED SETUP)



RE2000 (WPS)

Linksys Wireless-N Range Extender N300 Dual Band

- RE200 Unconfigured- Pressing the WPS looks for a wireless router/AP to connect to (with WPS being activated on the router or AP)
- RE2000 Configured- Pressing the WPS acts as a registrar and scans for WPS clients.

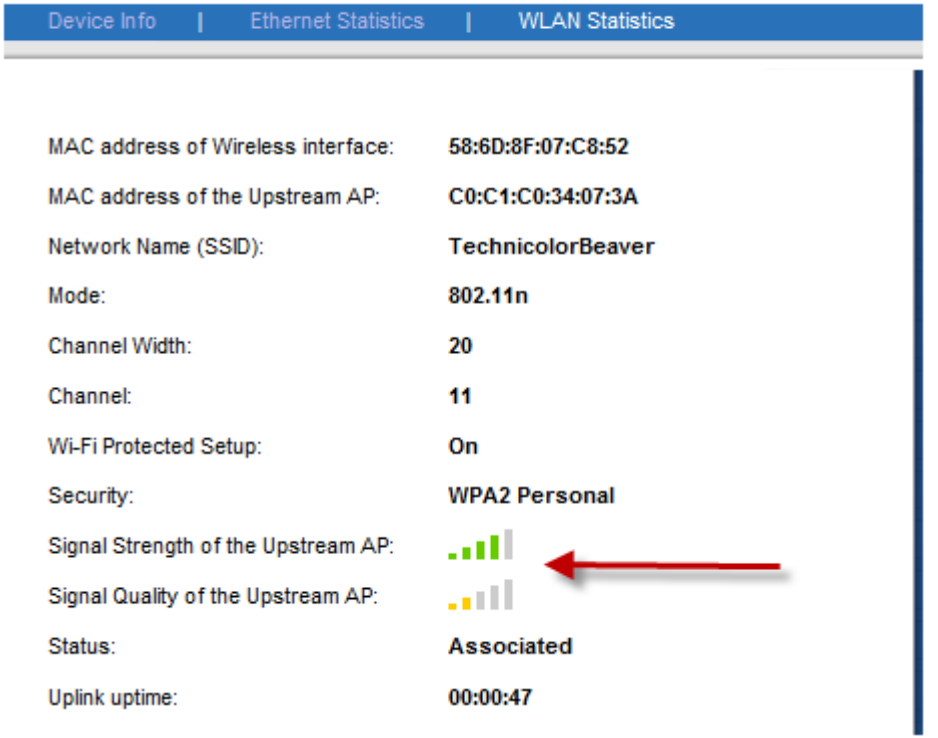
RE2000

Linksys Wireless-N Range Extender N300 Dual Band

- Default username blank/ default password is admin
- MAC address on label is for Ethernet port
- The default IP is 192.168.1.1 when it hasn’t detected a DHCP server on the network. It gives out a short lease of 192.168.1.x IP address..
- Default SSID is “LinksysExtenderXXXXX” where XXXXX is the last 5 digits of the serial number of the device.
- MAC address on the bottom is for the Ethernet port

Support Reminders

- When possible remember to use the Setup Utility and make sure the range expander is close to the router when first setting it up.
- If you cannot use the setup CD a WPS configuration will be a good fast alternative.
- Always remember to verify signal strengths within the UI after placing the devices in their final locations.
- This device should be supported for all theatres.


Device Info | Ethernet Statistics | WLAN Statistics
MAC address of Wireless interface: 58:6D:8F:07:C8:52
MAC address of the Upstream AP: C0:C1:C0:34:07:3A
Network Name (SSID): TechnicolorBeaver
Mode: 802.11n
Channel Width: 20
Channel: 11
Wi-Fi Protected Setup: On
Security: WPA2 Personal
Signal Strength of the Upstream AP:
Signal Quality of the Upstream AP:
Status: Associated
Uplink uptime: 00:00:47

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WAP300N

Linksys Wireless-N Access Point N300 Dual-Band

Michal Flis

January 2013

Agenda

- New Product ID
- Product Overview
- Ports, Buttons and LED behavior
- Setup Software
- Device Modes
- Setup over the GUI
- Summary

New Product ID

- The WAP300N comes with two external antennas and its dual-band selectable (2.4GHz or 5GHz) Access Point with 4 types of configuration modes

Major Features

- 4 Modes: Access Point, Wireless Media Connector, Wireless Range Extender, Wireless Bridge
- Built-in DHCP Server
- 2x2 MIMO
- 2 External removable antennas
- Compliant with 802.11 a/b/g/n
- 1- 10/100Mbps Fast Ethernet port with auto MDIX
- WPS

Product Comparison

	WAP300N	WAP610N	WAP54G
Wi-Fi Technology	802.11a/b/g/n	802.11a/b/g/n	802.11g
Supported Radio Band (GHz)	2.4 or 5	2.4 or 5	2.4
MIMO Configuration	2T2R	2T3R	N/A
Access Point Function	Yes	Yes	Yes
Wireless Media Connector Function (a.k.a. AP Client Function)	Yes	No	Yes [2]
Wireless Range Extender Function (a.k.a. Wireless Repeater Function)	Yes	No	Yes [3]
Wireless Bridge Function	Yes [1]	No	Yes [2]
Wi-Fi Protected Setup	Yes	Yes	No
Broadcom's Secure Easy Setup	No	No	Yes
Antenna (count)	External (2)	Internal (3)	External (2)
Antenna Connector	R-SMA	N/A	TNC
Wall-Mount Option	Yes	No	Yes

Ports and Buttons

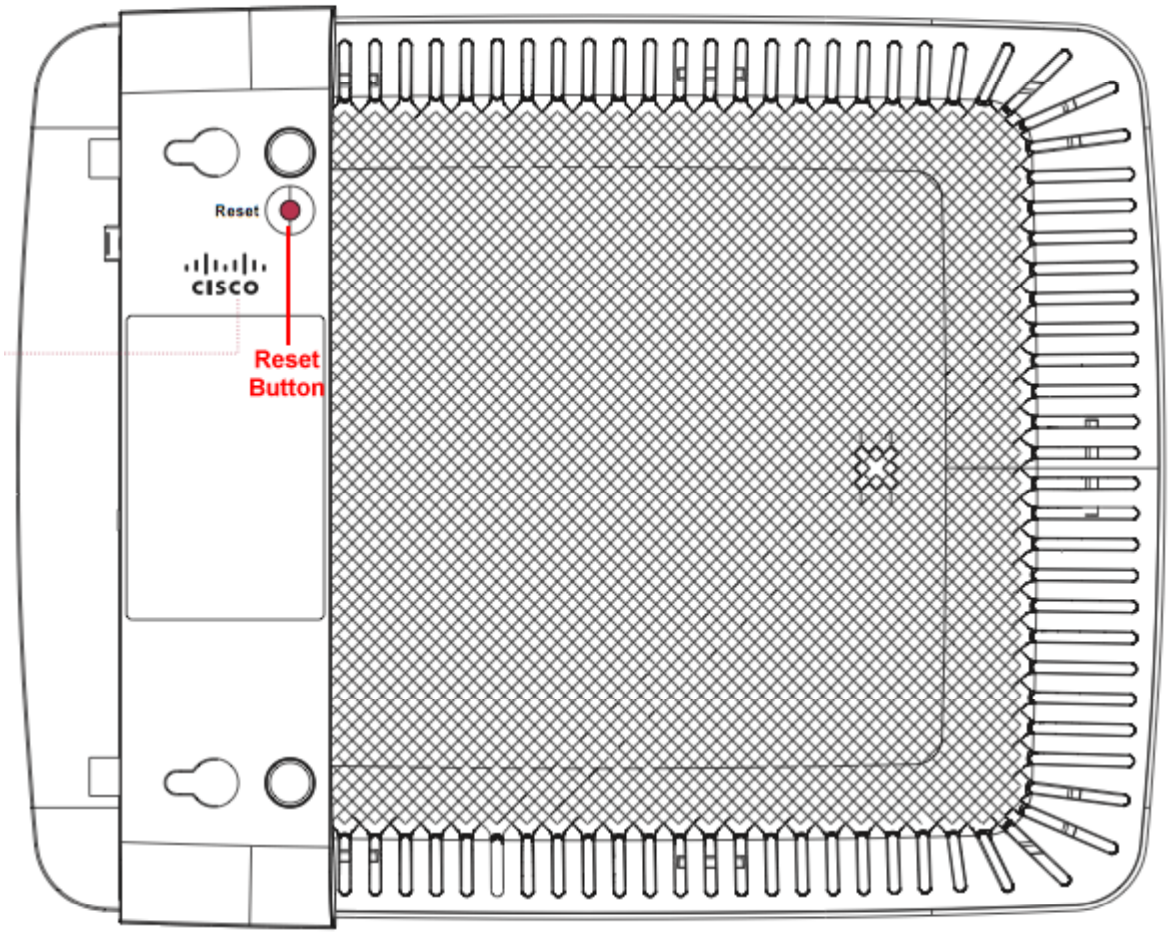
Port	Count	Description
Ethernet	1	10/100 RJ45 LAN port with auto-MDIX
Power	1	Power port for connecting power adapter.

Ports and Buttons

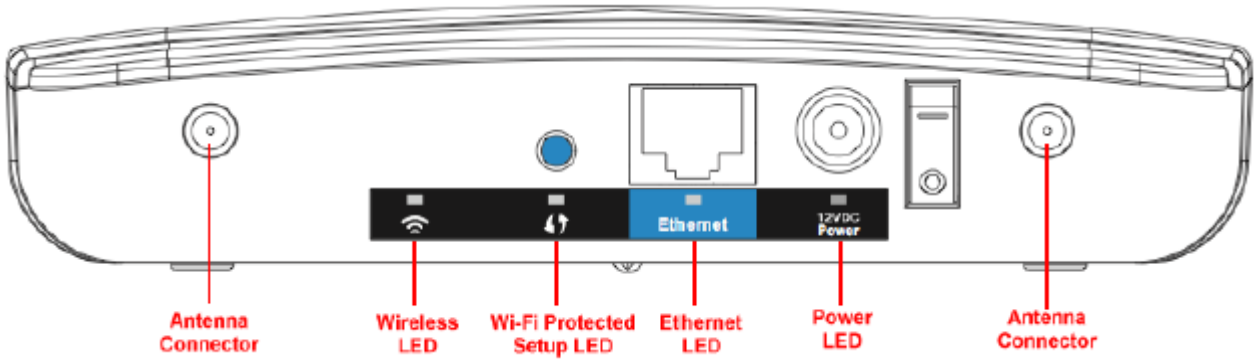
Button	Count	Description
Reset (Underneath)	1	Reset button. Press and hold about 5 seconds to reset settings to factory default.
Power Switch (EU model only)	1	Rocker switch. Power switch for turning on and off the device.
Wi-Fi Protected Setup	1	Wi-Fi Protected Setup push button.

Ports and Buttons

- Reset button. Press and hold about 5 seconds to reset settings to factory default

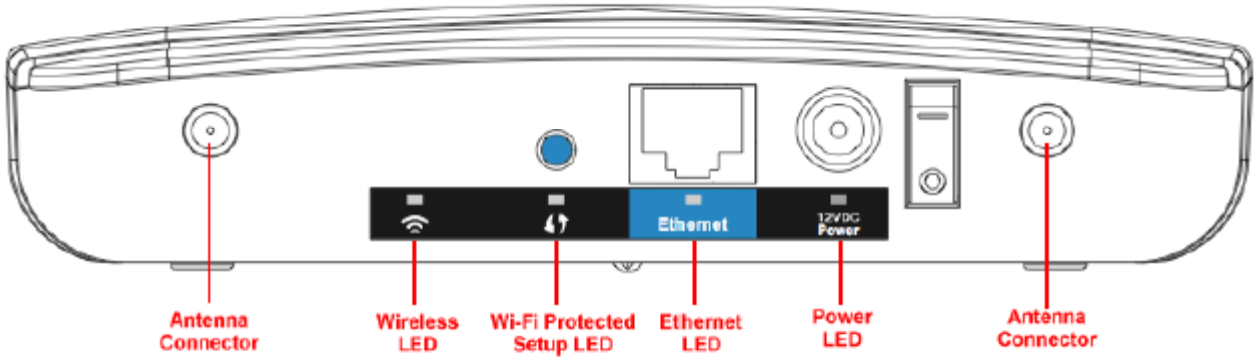


LEDs



LED	Color(s)	Activity	Description
Power	Green	Off	Power off
		Solid	Power on / device is ready
		Blinking (1.0 Hz)	Booting / system self-test / firmware upgrade
		Blinking (2.0 Hz)	Error found during system self-test
WPS	Green	Off	Wireless security is disabled
		Solid	WPS is successful or wireless security is enabled.
		Blinking (1.0 Hz)	WPS in progress. Up to 2 minutes.
		Blinking (2.0 Hz)	WPS error or session overlap. Up to 2 minutes. Then, back to previous state.

LEDs



Wireless	Green	Off	Wireless interface is not ready yet or disabled (AP mode). No wireless connection (in WMC, WRE & WB mode).
		Solid	Wireless interface is operational (in AP mode). Wirelessly connected to a router or an access point (in WMC & WRE mode). Wirelessly connected to at least one WAP300N (in WB mode).
		Blinking	Data is transmitting through the wireless interface
Ethernet	Green	Off	No physical link on LAN port
		Solid	Physical link is up on LAN port. No data activity.
		Blinking	Data is transmitting through LAN port

Setup Software

- Is used to configure the wireless settings in Access Point mode only
- To configure using other modes you need to access the WAP's UI
- Will not install any software on the computer
- Will give you an option to select which band to configure

Device Modes

AP Mode	Requirement
Access Point Mode	Existing Network
Wireless Media Connector Mode	Existing a/b/g/n wireless router or AP and Active Ethernet Port
Wireless Range Extender Mode	Existing a/b/g/n wireless router or AP
Wireless Bridge Mode	Additional WAP300N

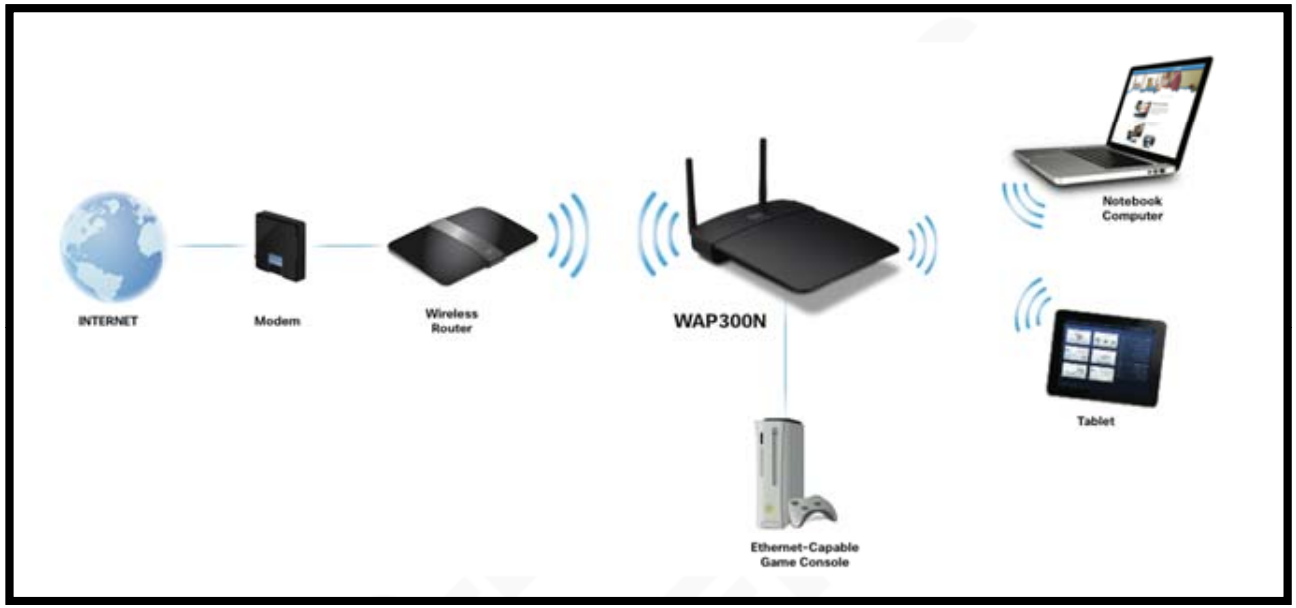
Access Point Mode (Default)

- Upgrades a wired router to a wireless network
- Upgrades an older wireless network to 802.11n
- Upgrades a single band network to dual band 5GHz (NOT simultaneous)
- Extends the wireless network (Only if AP is wired back to existing wireless router, older method)

Wireless Media Connector

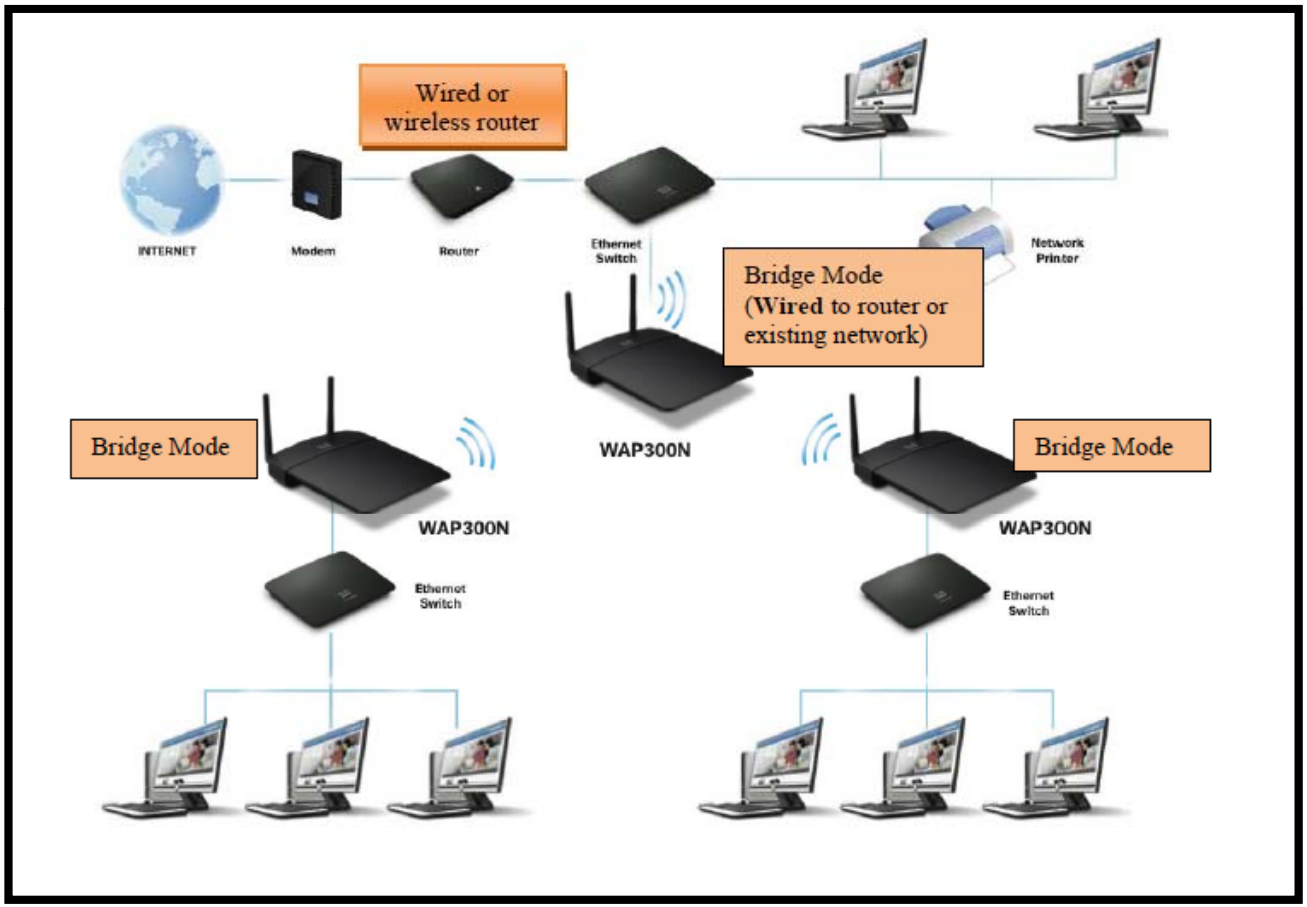
- When you change the WAP into this mode, the Wireless tab will change similar to other Media Connectors. You will have the Site Survey option as well.
- You can also plug the WAP in this mode into a switch and all wired devices behind the switch will obtain an IP up to 64 wired clients (in theory; not fully tested. ****Note: Not officially supported**)

Wireless Range Extender Mode



- Extends the wireless range of an existing wireless network (does not need to be plugged into the router)
- Adds wireless networking capability to any wired (Ethernet) device.
- Can only extend one band at a time.
- If connecting a switch a total of 64 clients are supported (wired+wireless) (in theory; not fully tested. ****Note: Not officially supported**)

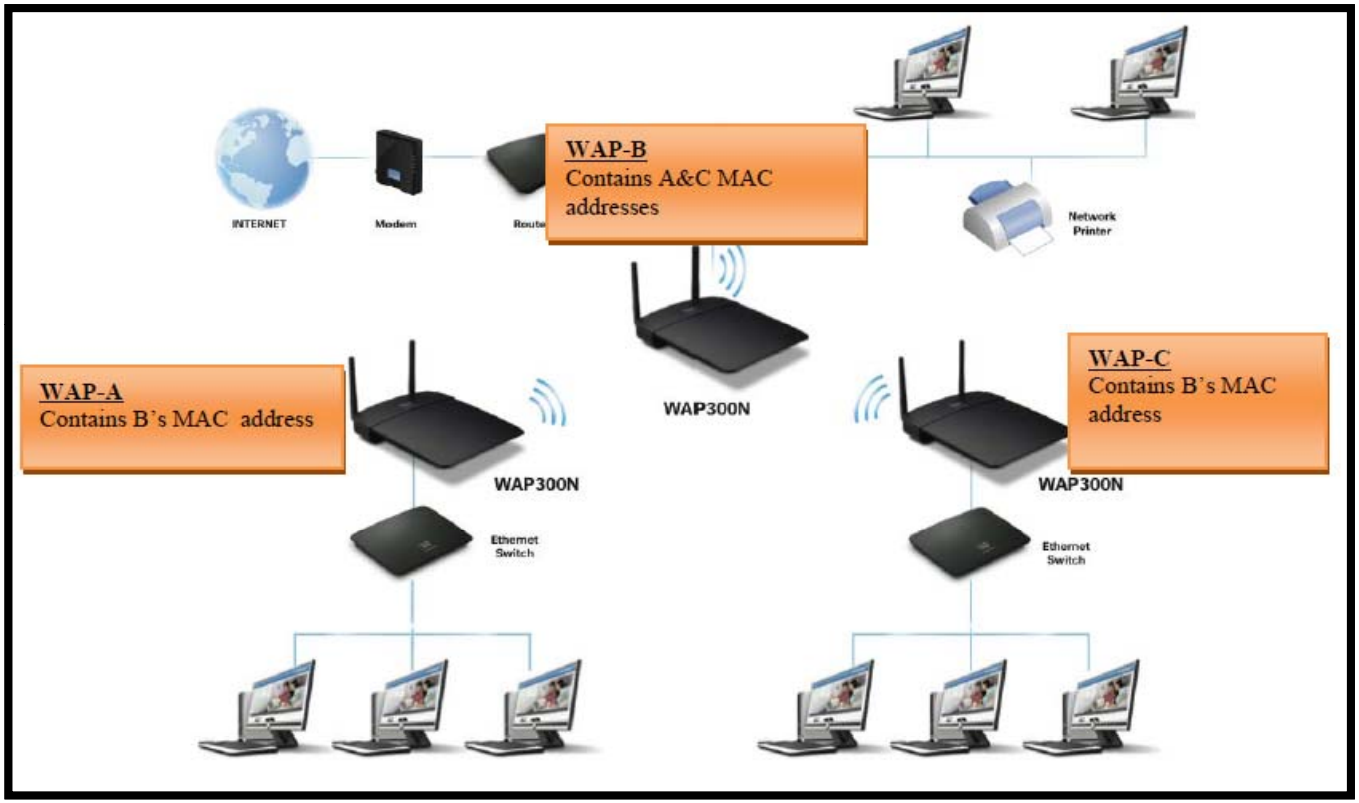
Wireless Bridge Mode



Wireless Bridge Mode

- Based on WDS (Wireless Distribution System). No standardization for WDS, may vary from vendor to vendor therefore in this mode it must be used with another WAP300N.
- Requires 2 or more WAP300N to operate. One WAP in Bridge mode must be wired to existing router/network. This way all other WAP's in bridge mode can communicate back to router/network. The existing network does not need to have an existing Wi-Fi network. However in order to have wireless clients you must have an existing Access Point. All other WAP's in Bridge mode connected to the switches do not need to be wired back to main router/network.
- Enter up to 4 MAC address from the remote WAP300N in Bridge mode.
- Each wired network must be connected to it's own WAP300N (Bridge mode)

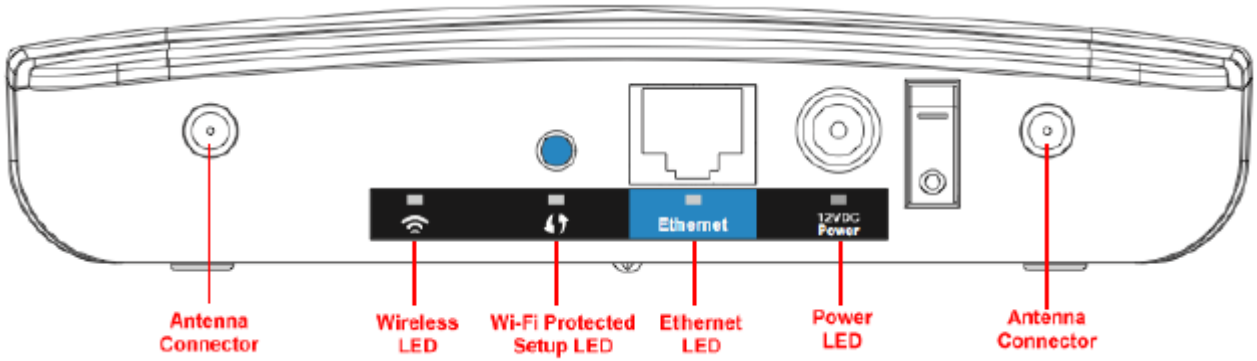
Wireless Bridge Mode



Do not create a loop in your network. In the above example, a loop would be adding an A to C wireless connection, while you already had an A to B and B to C wireless connections

VIDEO

WPS



The use of WPS will depend on the mode the WAP300N is currently configured as:

- Access Point mode- Wireless clients to WAP300N
- Wireless Media Connector mode- WAP300N to a wireless router or Access point
- Wireless Range Extender mode- WAP300N to a wireless router, Access point or wireless clients
- Wireless Bridge mode- No WPS support (configuration is based on Local Mac address and not wireless settings)

Built-in DHCP Server, LAN

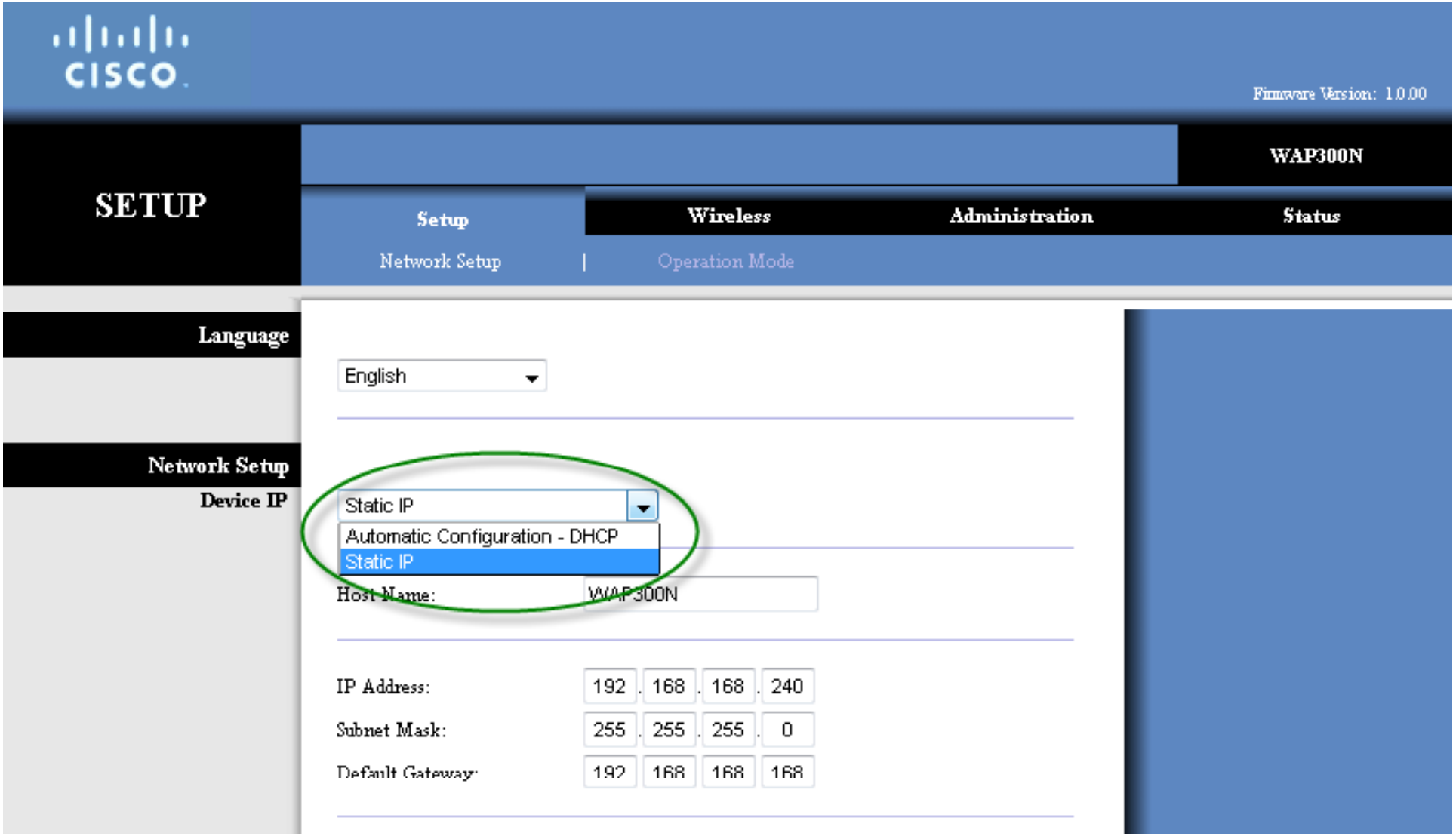
- Computer physically connected to the access point via Ethernet can easily communicate with the device and carry out the setup process even before the access point is connected to the primary DHCP server of the home network.
- Enabled when the access point has detected that there is no other DHCP server on the network. Otherwise, the built-in DHCP server is disabled and the device behaves as a DHCP client.
- When the built-in DHCP server is enabled
  - IP address of WAP300N is 10.100.1.1
  - WAP300N gives out short IP address lease (15 seconds) to wired/wireless client devices connected to the access point.

Accessing the UI

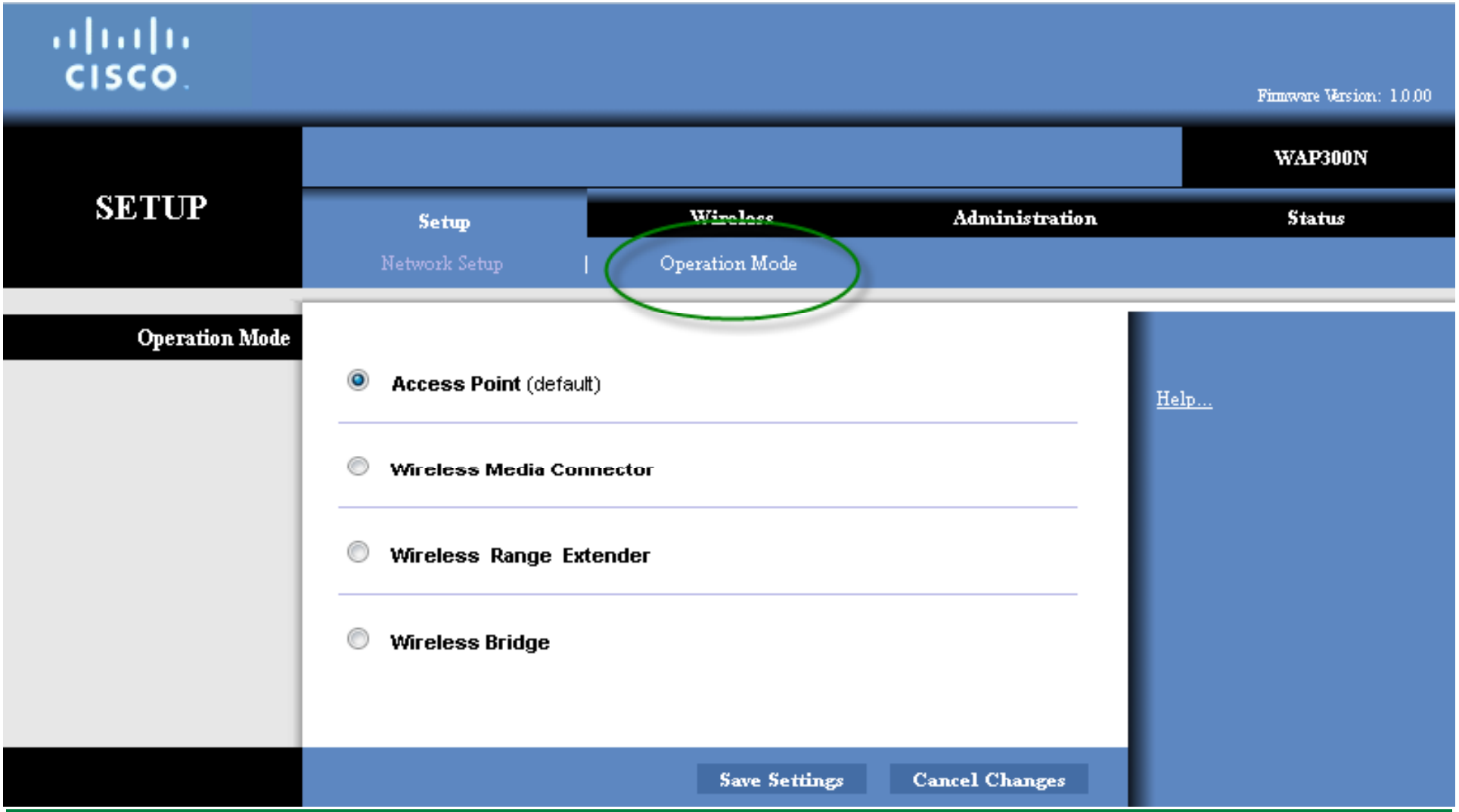
Default IP Address	10.100.1.1
Default username	admin
Default password	admin
Default SSID	Ciscoxxxxx (last 5 digits of sn#)
DHCP Server	Yes, when there is no DHCP server in the network

Accessing the UI

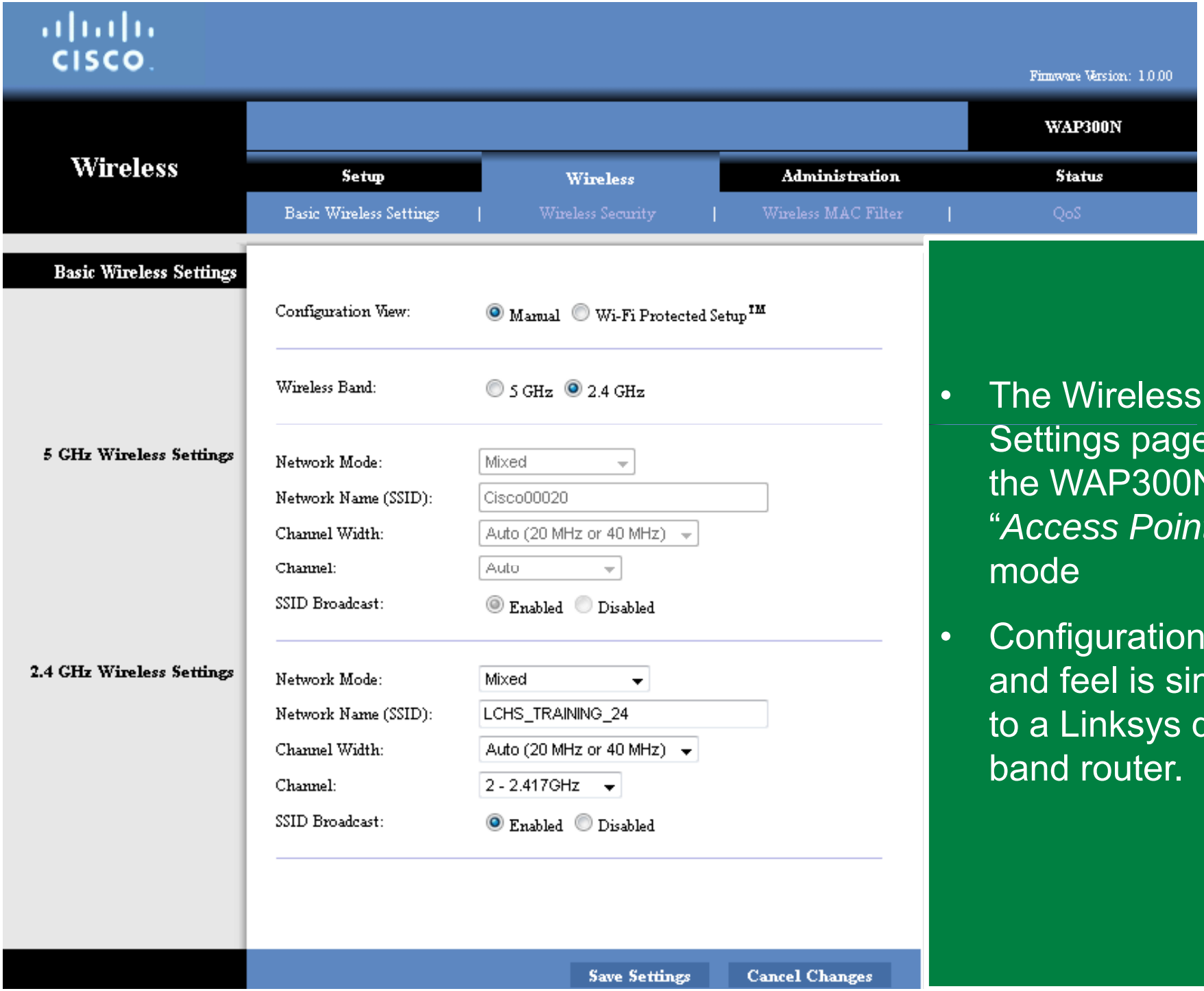
- If the WAP is connected to the existing network and the UI needs to be accessed, the customer will need to determine the IP by either looking up the router's DHCP table and/or using any other method to determine it's IP.
- Faster way for support to configure it may be by connecting directly to computer, configure it and then placing it back on the network.



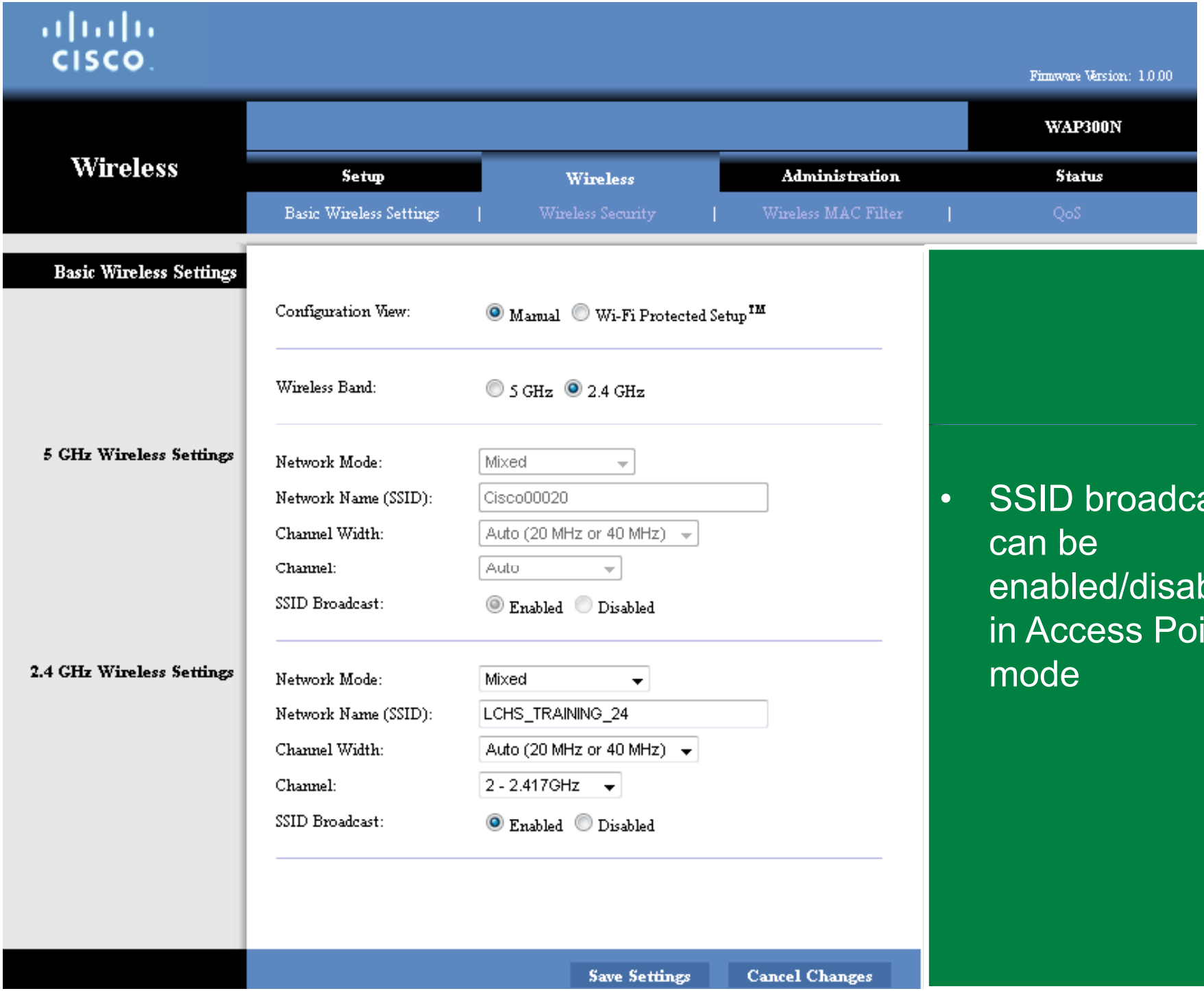
- The Setup > Network Setup page
- We can configure the WAP300N to have a Static IP address once we accessed the Setup Page



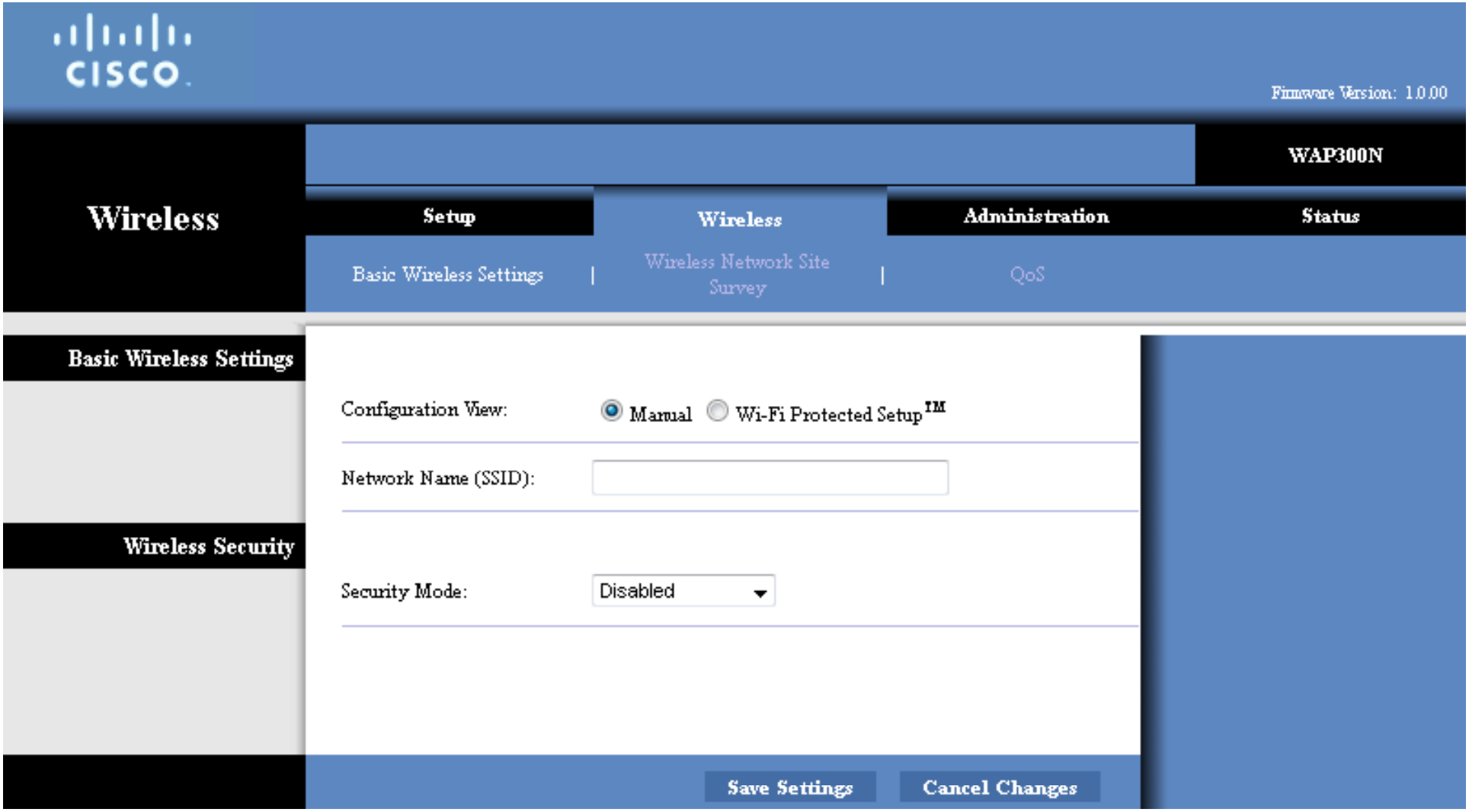
- The Setup > Operation Mode page
- This is where you can go to change the Operation mode of the WAP300N. Default is Access Point.



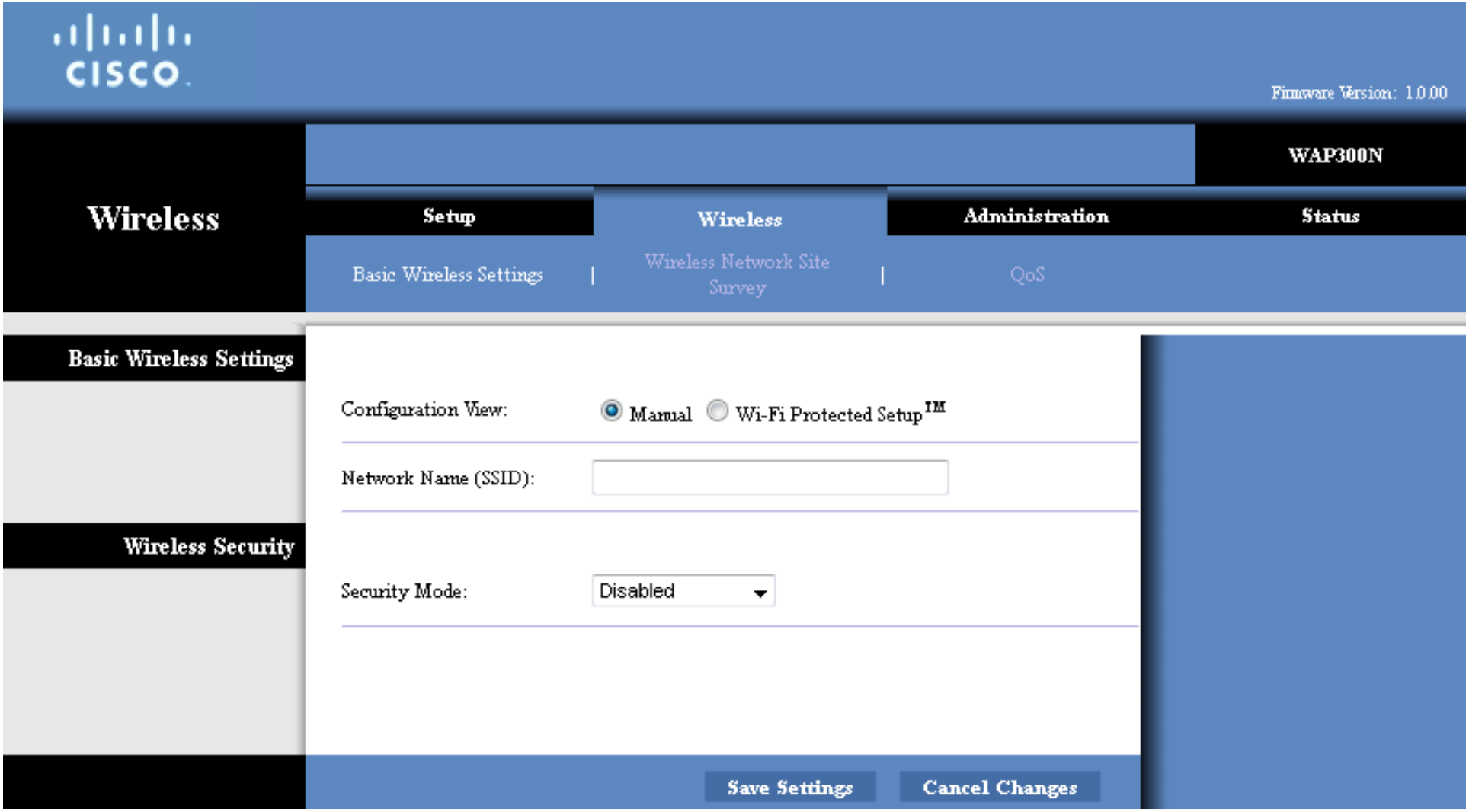
- The Wireless Settings page of the WAP300N on "*Access Point*" mode
- Configuration, look and feel is similar to a Linksys dual band router.



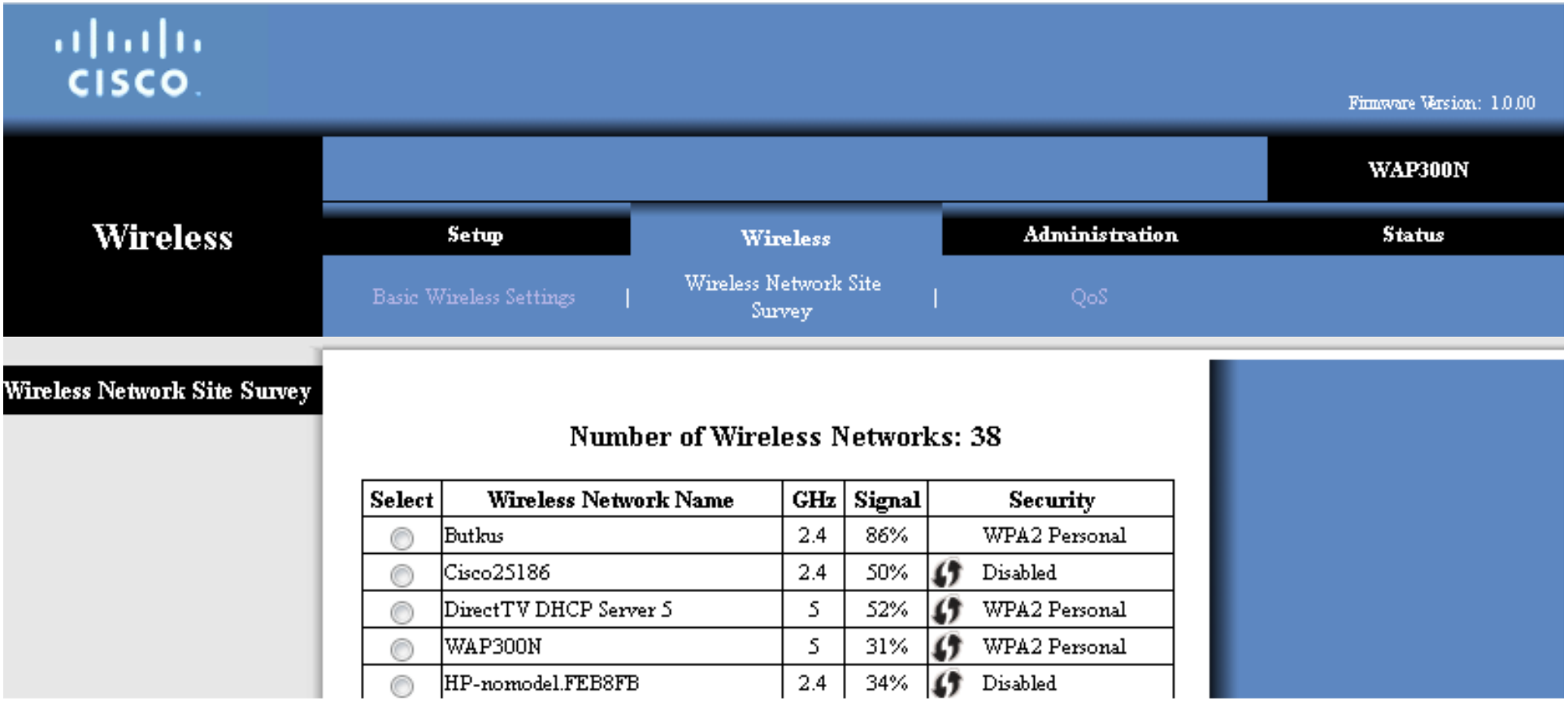
- SSID broadcast can be enabled/disabled in Access Point mode



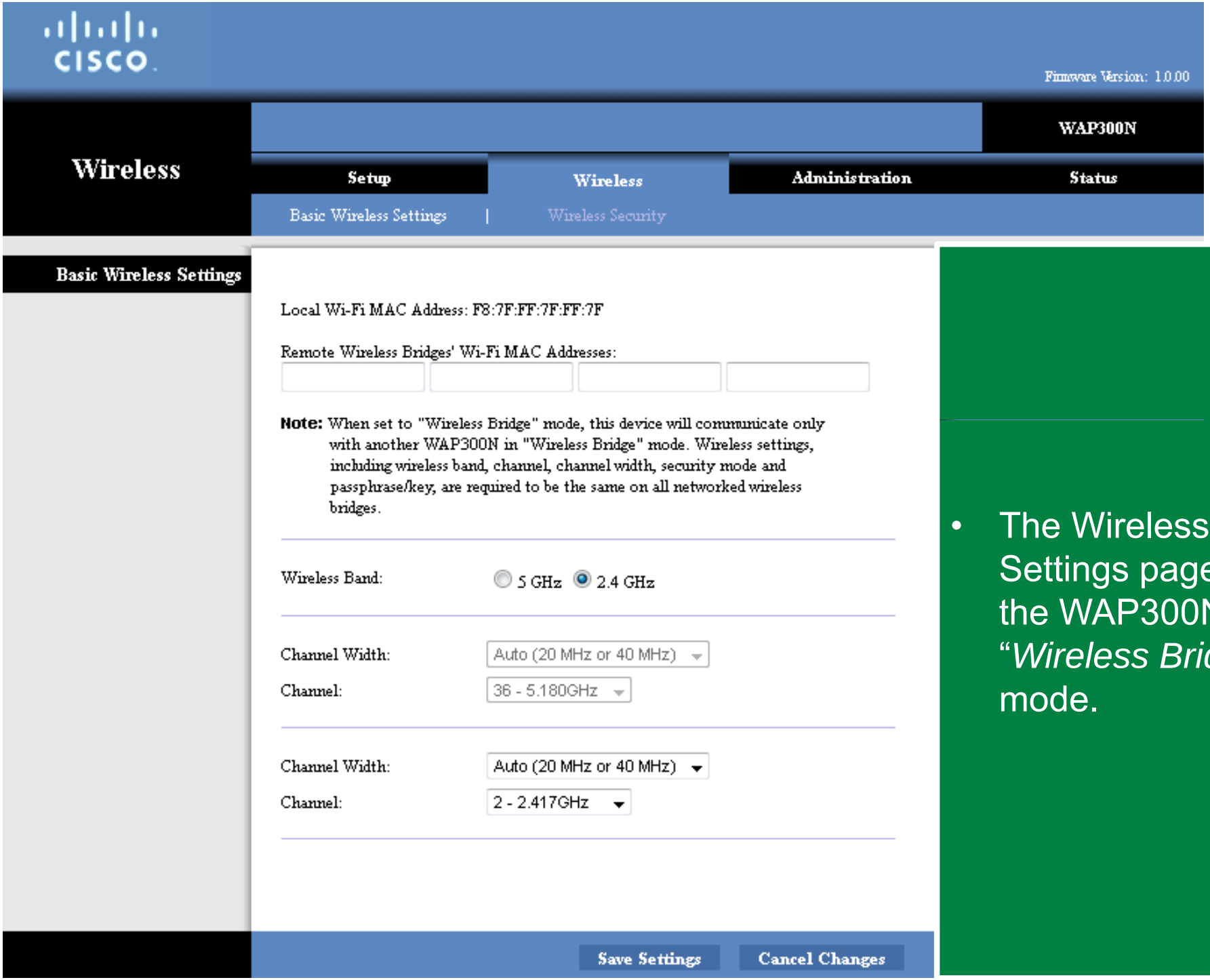
- The Wireless Settings page of the WAP300N on "*Wireless Media Connector*" and "*Wireless Range Extender*" mode.
- You can connect to the upstream wireless router/AP manually by using this page or use the Wireless Network Site Survey tab.



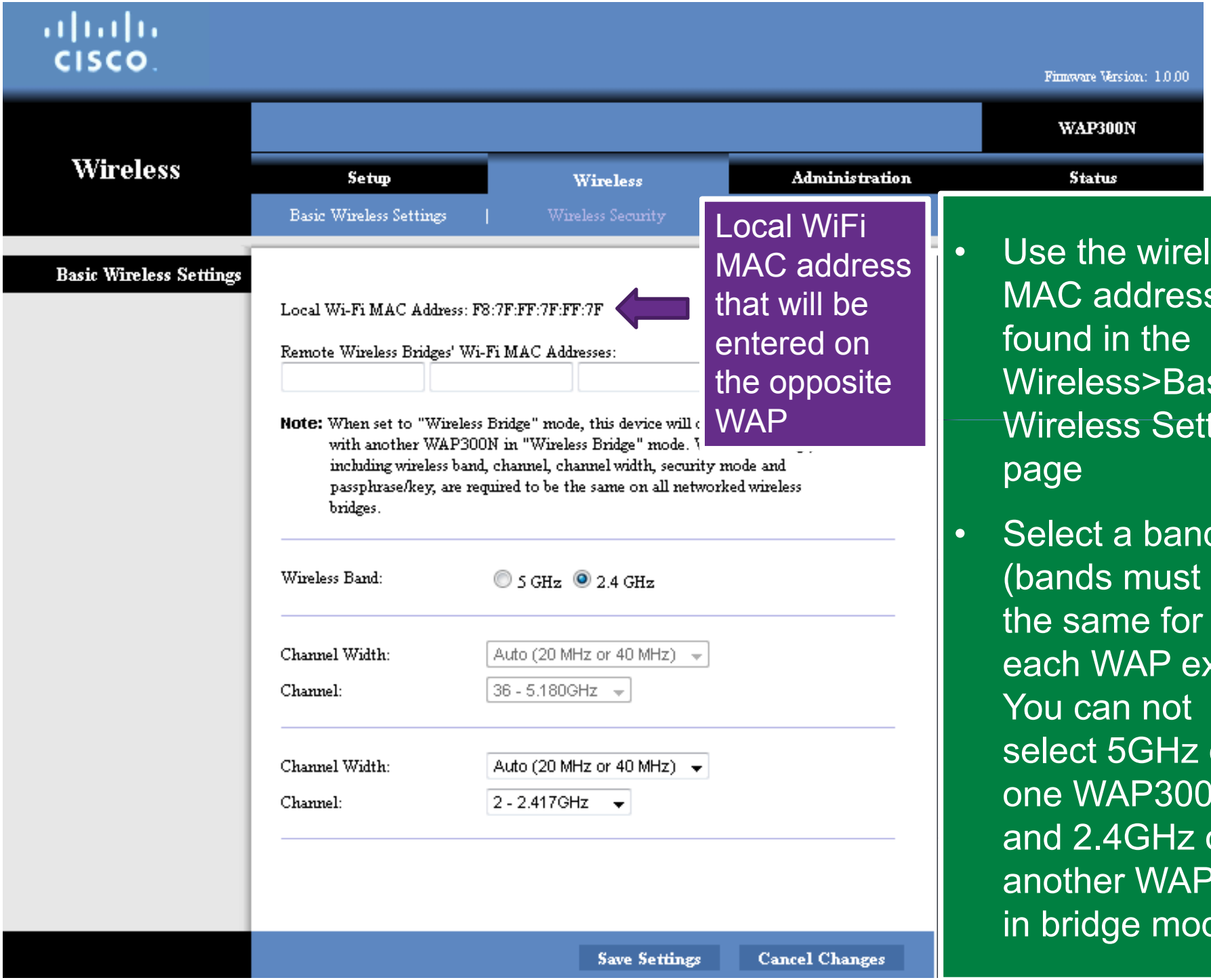
- When WAP300N is in Wireless Range Extender mode, once WAP300N is connected to the upstream wireless router/access point, WAP300N's SSID would change to match with that of the upstream router/access point.
- In case connection to the upstream router/access point fails, WAP300N's SSID would fall back to its default SSID ("Cisco*XXXXX*").



- The Wireless Network Site Survey tab will display a list of access points detected .
- Select the preferred AP on the list and enter the wireless network password.


cisco
Firmware Version: 1.0.00
Wireless
WAP300N
Setup
Wireless
Administration
Status
Basic Wireless Settings | Wireless Security
Basic Wireless Settings
Local Wi-Fi MAC Address: F8:7F:FF:7F:FF:7F
Remote Wireless Bridges' Wi-Fi MAC Addresses:
Note: When set to "Wireless Bridge" mode, this device will communicate only with another WAP300N in "Wireless Bridge" mode. Wireless settings, including wireless band, channel, channel width, security mode and passphrase/key, are required to be the same on all networked wireless bridges.
Wireless Band: 5 GHz 2.4 GHz
Channel Width: Auto (20 MHz or 40 MHz)
Channel: 36 - 5.180GHz
Channel Width: Auto (20 MHz or 40 MHz)
Channel: 2 - 2.417GHz
Save Settings
Cancel Changes

- The Wireless Settings page of the WAP300N on "*Wireless Bridge*" mode.


cisco
Firmware Version: 1.0.00
Wireless
WAP300N
Setup
Wireless
Administration
Status
Basic Wireless Settings | Wireless Security
Basic Wireless Settings
Local Wi-Fi MAC Address: F8:7F:FF:7F:FF:7F
Remote Wireless Bridges' Wi-Fi MAC Addresses:
Note: When set to "Wireless Bridge" mode, this device will
with another WAP300N in "Wireless Bridge" mode.
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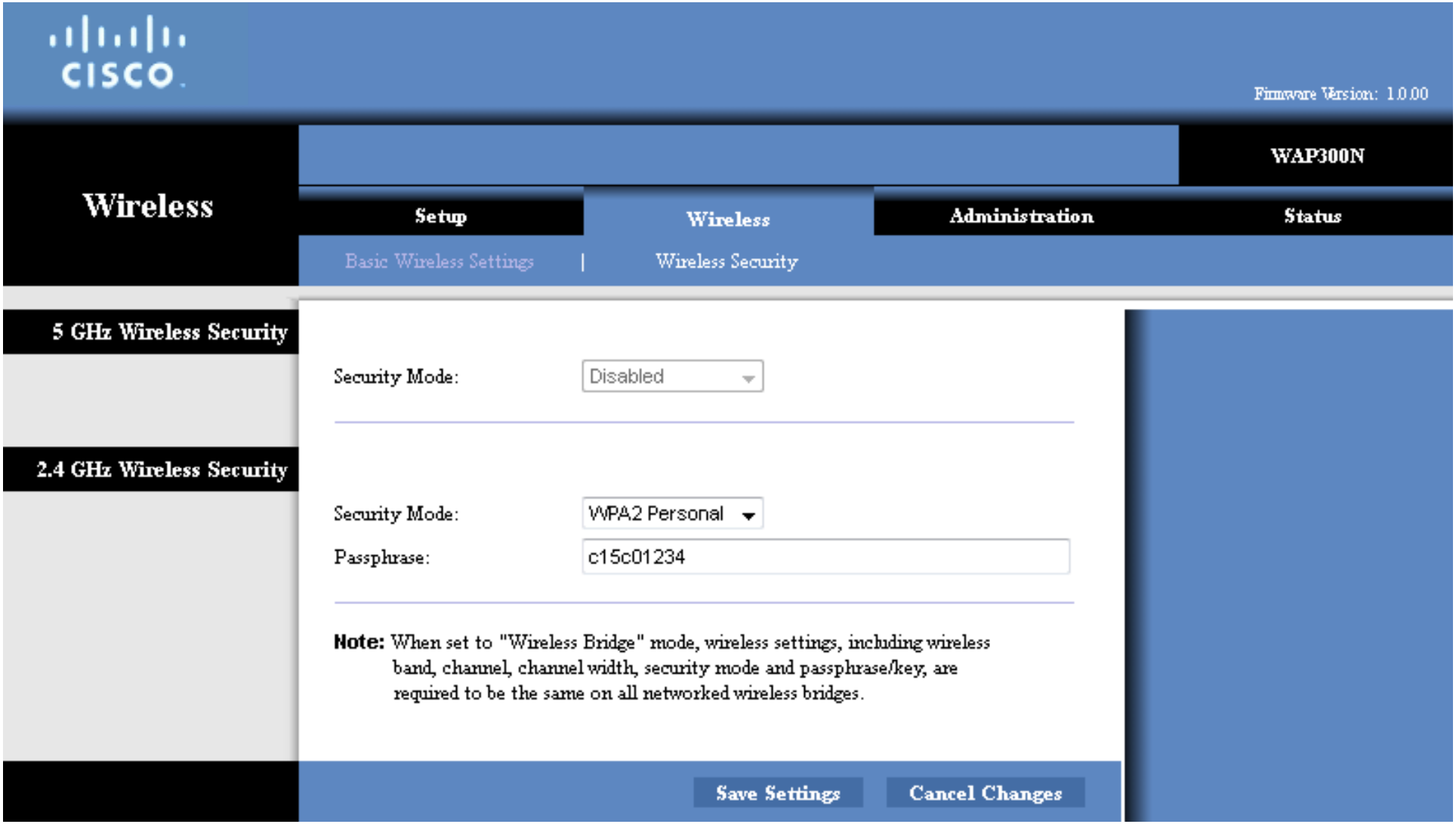
Wireless Band: 5 GHz 2.4 GHz
Channel Width: Auto (20 MHz or 40 MHz)
Channel: 36 - 5.180GHz
Channel Width: Auto (20 MHz or 40 MHz)
Channel: 2 - 2.417GHz
Save Settings
Cancel Changes

Local WiFi MAC address that will be entered on the opposite WAP

- Use the wireless MAC address found in the Wireless>Basic Wireless Settings page
- Select a band (bands must be the same for each WAP ex: You can not select 5GHz on one WAP300N and 2.4GHz on another WAP300 in bridge mode).



- All wireless settings must be the same on all Bridge mode WAPs

Product Label

Note: Mac address printed on label is for the Ethernet port and NOT to be used for Bridge configuration

Menu Tree

Operation Mode	Basic Wireless Settings	Wireless Security	Wireless Network Site Survey	Wireless MAC Filter	QoS
Access Point	X	X		X	X
Wireless Media Connector	X		X		X
Wireless Range Extender	X		X		
Wireless Bridge	X	X			

- The sub-pages available under the page **Wireless** depend on the operation mode that WAP300N is in

Scope of Support

- Installation, Configuration and Setup are fully supported based on the requirements. Note that OS requirement is solely for the Setup software.
- Absolutely no support will be provided if 3rd party antennas are being used (voids warranty)
- Whole unit replacement or replacements of antennas are available within warranty if the antennas are missing, or damaged.
- There will be a $15 charge for replacement of antennas through customer service when out of warranty.
- Antennas will be replaced as a pair only.

Linksys PLW400: Powerline AV Wireless Network Extender

Agenda

- Product Overview
- WPS Setup
- Product Utility
- User Interface
- Known Issues/Recommendations

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Product Overview

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Product Description

PLW400

PLE400

- **PLW400**- Powerline 1-Port Fast Ethernet Network Adapter & AP
- **PLWK400** - Powerline Wireless Kit Includes 1 PLE400 + 1 PLW400

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Key Features

High speed (up to 200 Mbps) for faster transfer rates
Fast Ethernet port (1 x 10/100) to connect to any wired device
Wireless flexibility (802.11n/2.4GHz) for additional wireless connections in the home
2x2 MIMO and WLAN data rate of up to 300Mbps
Push button security- Wi-Fi Protected Setup for simple and secure device paring

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Network Diagram

- By simply adding the PLW400 adapter to an existing Powerline network (**wireless)**, a new wired and wireless network connection is established

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Network Diagram

- By simply adding the PLW400 adapter to an existing Powerline network (**wired**), a new wired and wireless network connection is established

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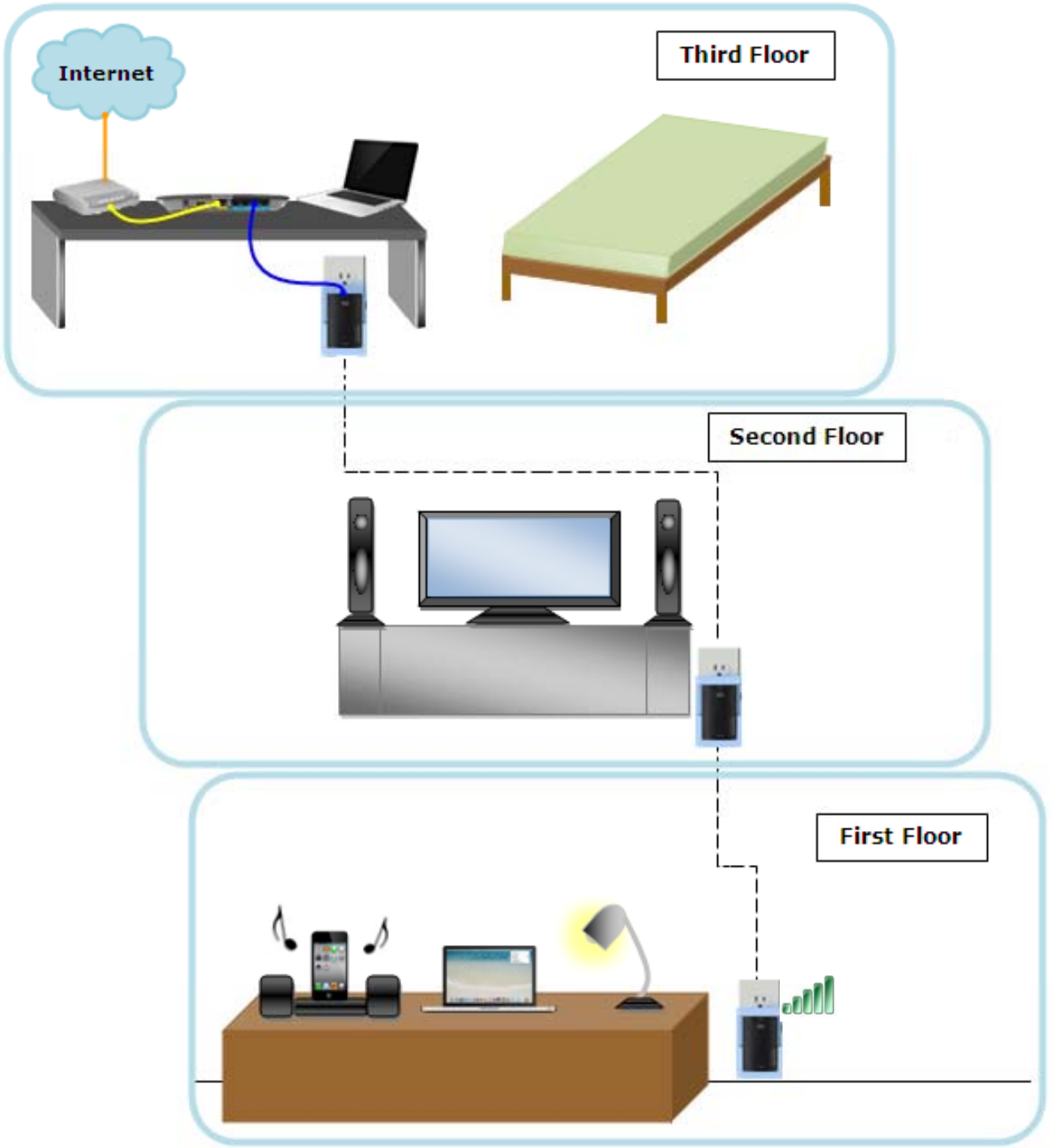

Video

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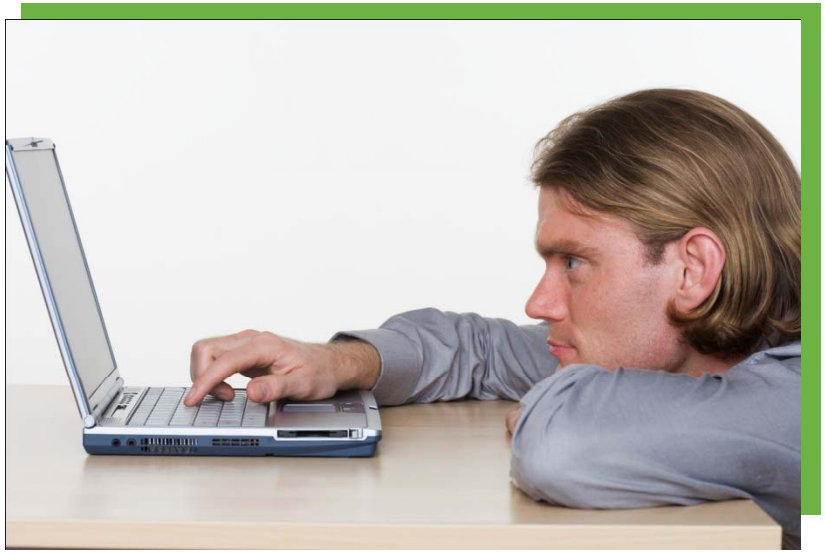
Minimum System Requirements

- PC or other device with Ethernet network port
- AC Power Outlet
- **At least 1 existing in home Powerline adapter**
- PC/Mac with CD-ROM for utility or WPS enabled router



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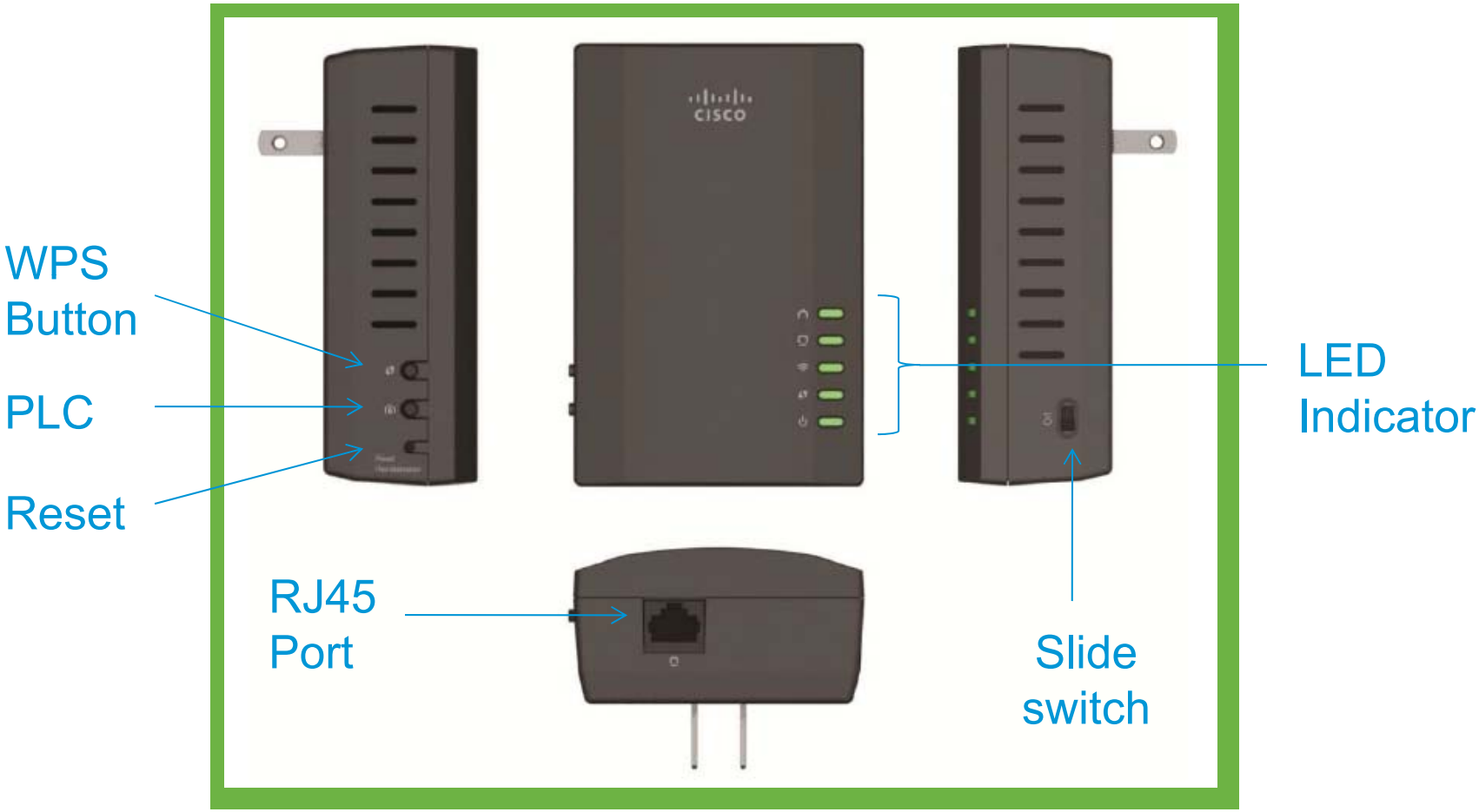
PLW400 Industrial Design



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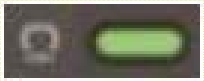
LED Status

LED	STATUS	DESCRIPTION
Power	Off	Device off
	Flashing Indefinitely	Pairing error or system error
	Flashing Fast	Factory default
	Solid	Device ready
Ethernet 	Off	Not connected to Ethernet network
	Flashing	Send/receive data
	Solid	Connected to Ethernet network

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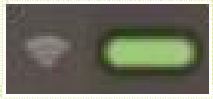
LED Status

LED	STATUS	DESCRIPTION
HomePlug	Off	Not connected to HomePlug network
	Flashing Fast	Send/receive data
	Flashing Slow	Pairing
	Solid	Connected to HomePlug network
WLAN 	Off	WLAN is disabled or failed to work
	Flashing	Send/receive data
	Solid	WLAN is enabled and ready to work

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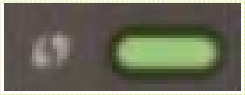
LED Status

LED	STATUS	DESCRIPTION
WPS 	Flashing slow	WPS in progress. Up to 2 minutes
	Flashing fast	WPS error or session overlap. Up to 2 minutes
	Solid	WPS successful

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WPS Setup

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WPS Setup

1. Plug the PLW400 to a power outlet and press the WPS button located on the side.

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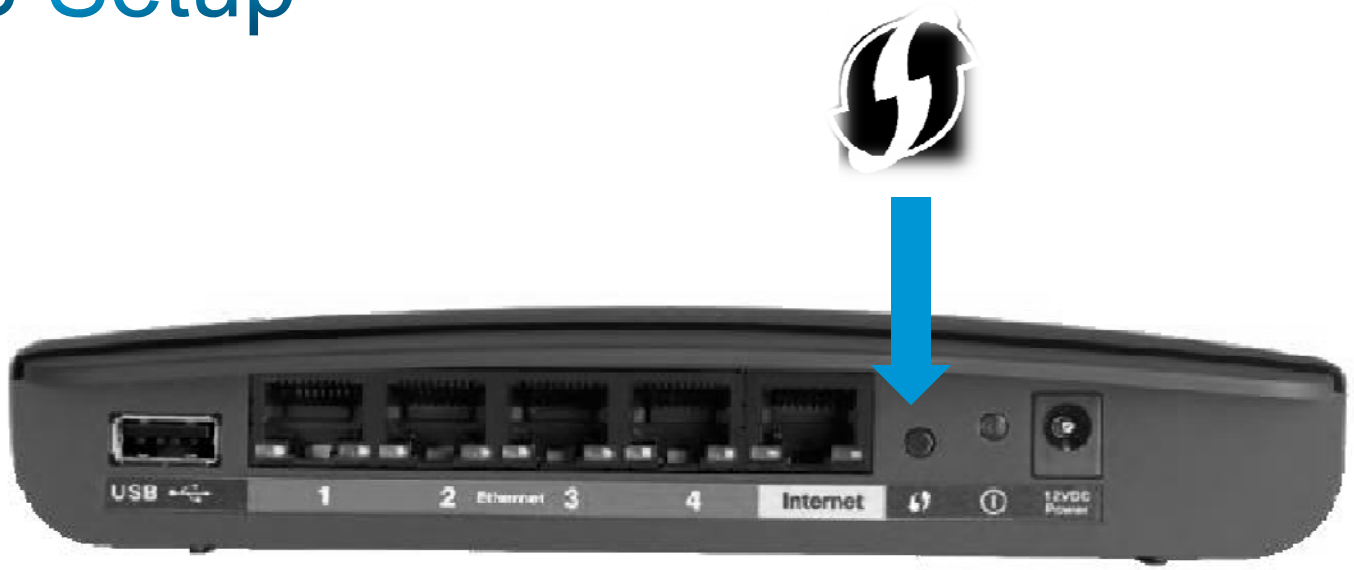
WPS Setup



2. Press the WPS button on the router to quickly get the wireless network settings.
3. WPS will be synched. You can now move the PLW400 to the desired location in the home.

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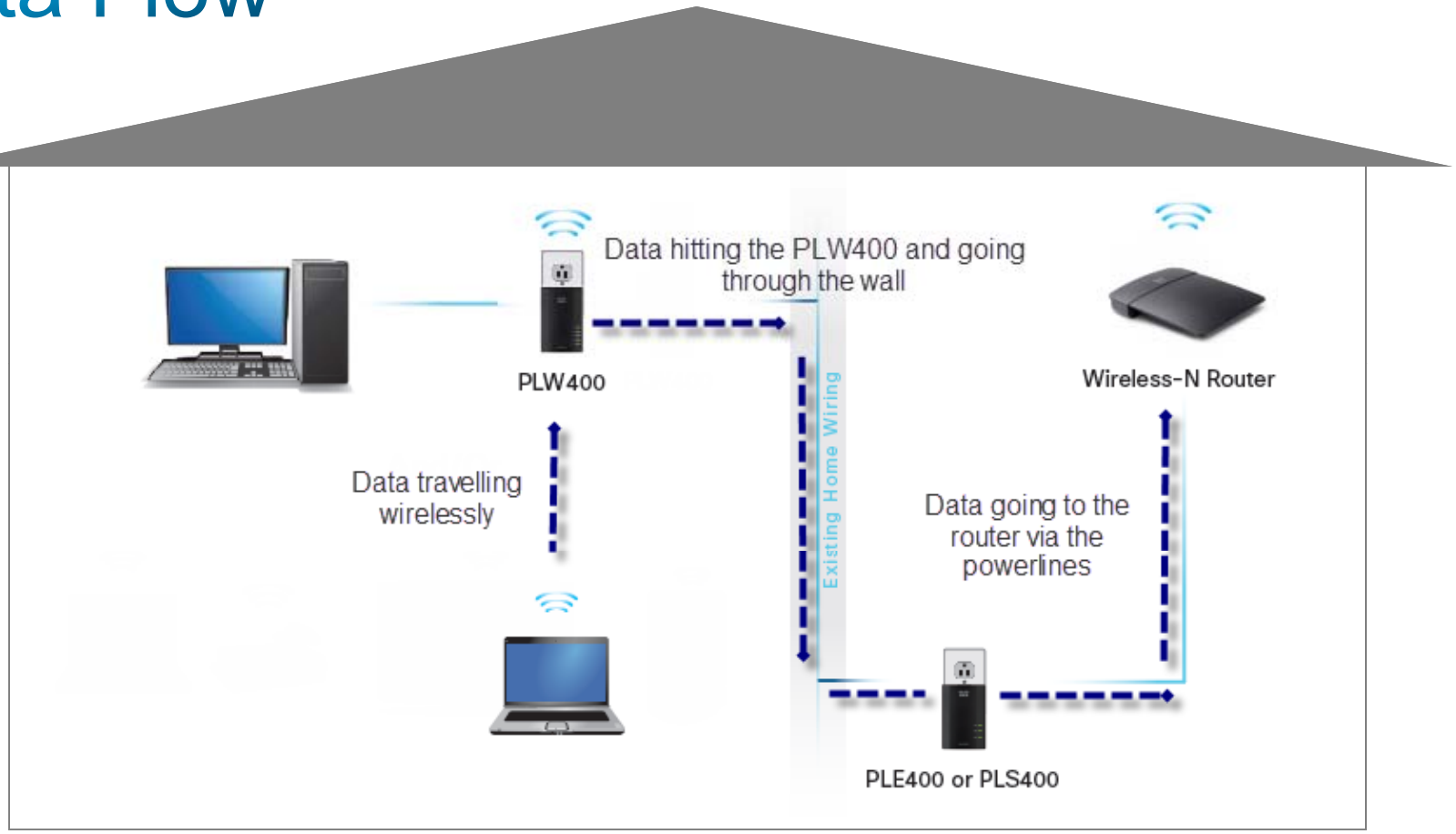
Data Flow


Data hitting the PLW400 and going through the wall
PLW400
Wireless-N Router
Data travelling wirelessly
Existing Home Wiring
Data going to the router via the powerlines
PLE400 or PLS400

- Even though the SSID of the main network will be the same as the SSID of the PLW400, the data will still flow through the walls.

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Product Utility

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Installing the Product Utility

1. Connect your PLW400 to a power outlet.
2. Use an Ethernet cable to connect the PLW400 to your computer (it is recommended to run the utility from a wired computer if possible).
3. Install the Cisco Powerline AV Utility software.

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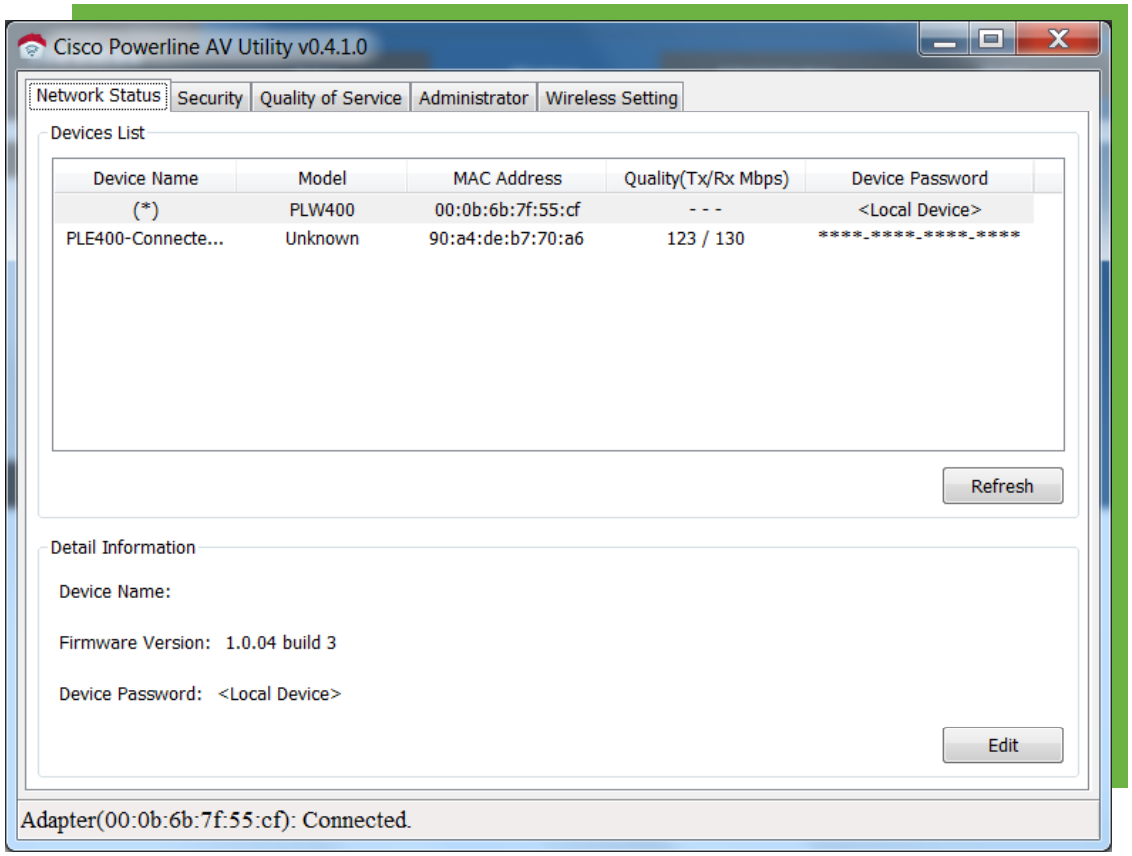
Product Utility

Network Status

- Displays a device list with device name, model, MAC address, device password, firmware version and PLC physical layer line rate



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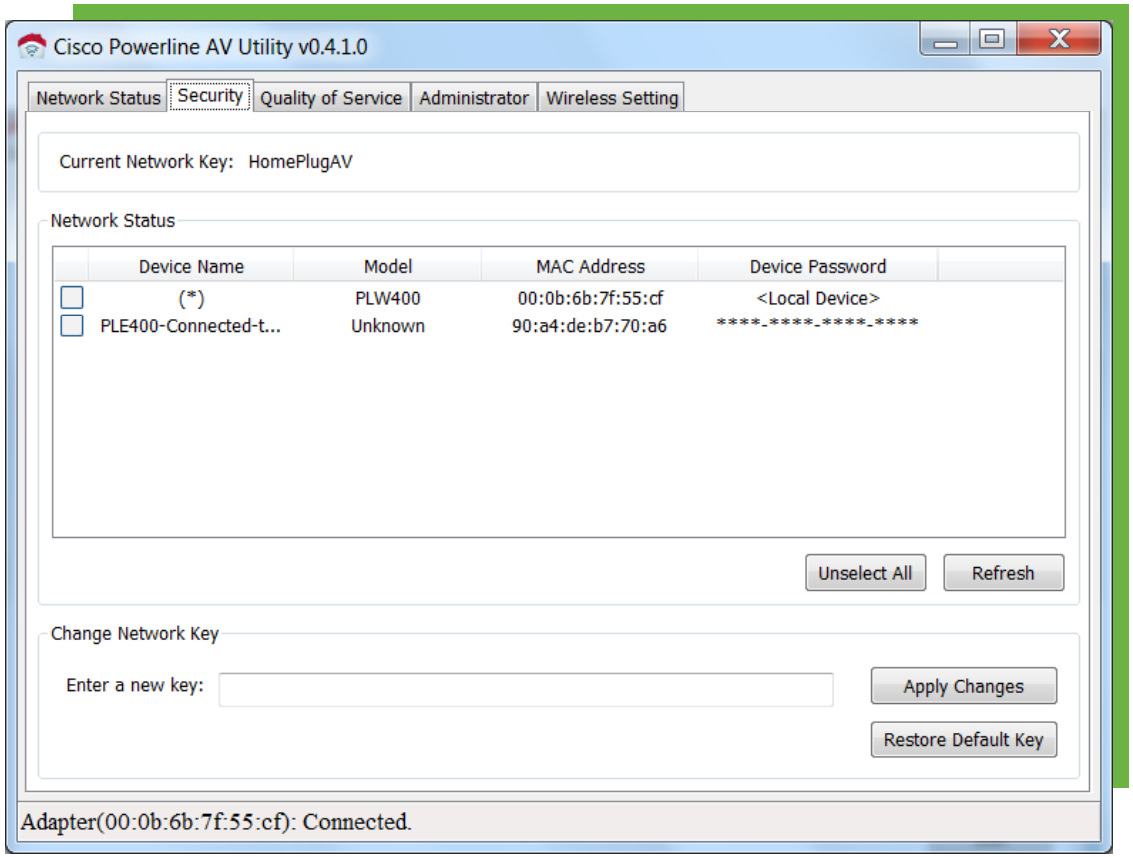
Product Utility

Security

- Displays device list
- Displays default encryption key HomePlug AV
- Allows user to change network password/encryption key (8~64 ASCII characters)



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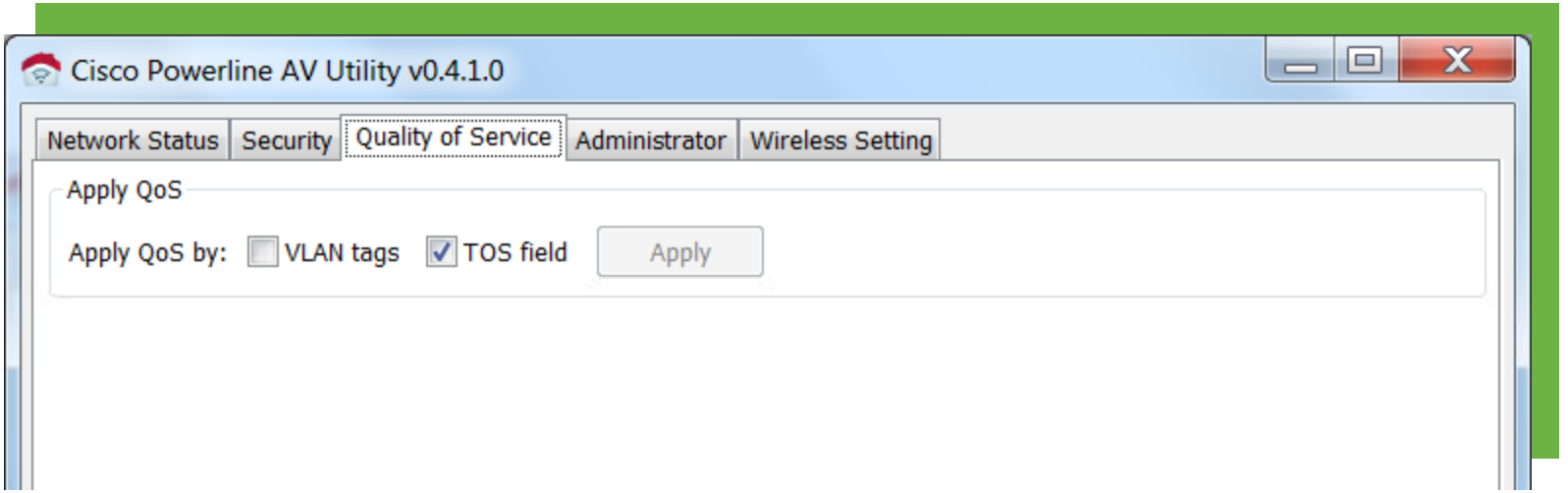
Product Utility



QoS

- Allows user to configure the device and protocol priority
- Allows user to configure QoS setting by 802.1Q VLAN tag or TOS field in the IP header

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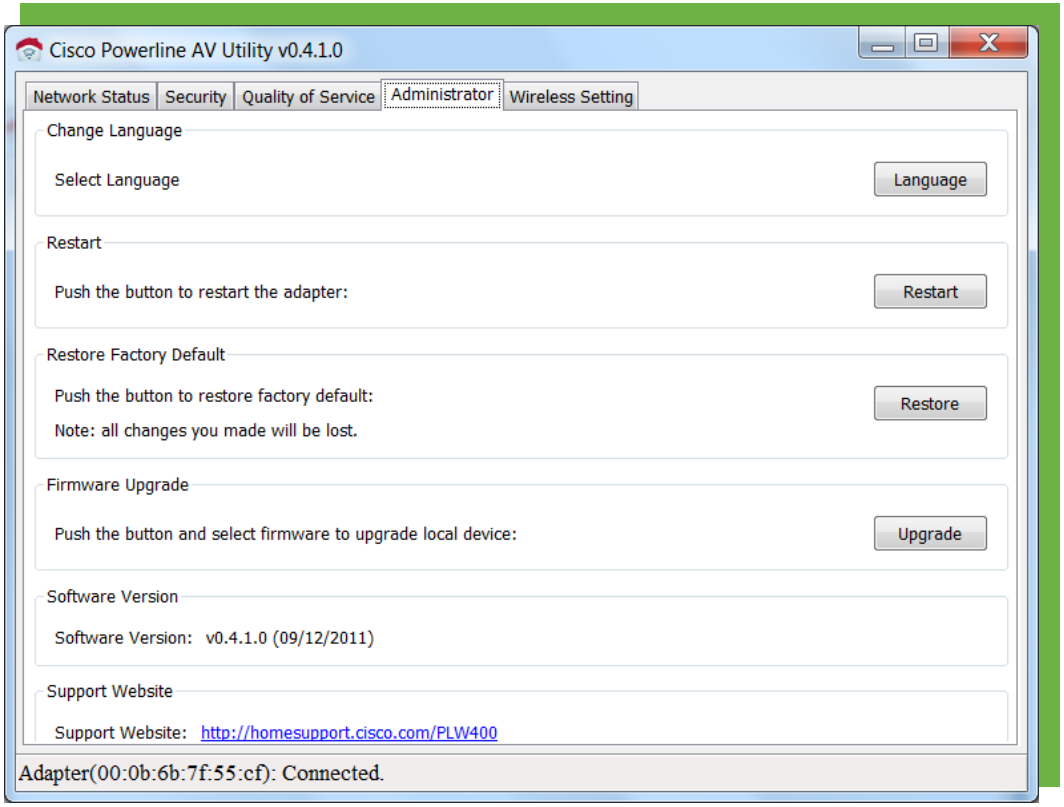
Product Utility

Administrator

- Displays utility version
- Language Selection
- Allows user to restart local adapter
- Allows user to restore local device to factory default



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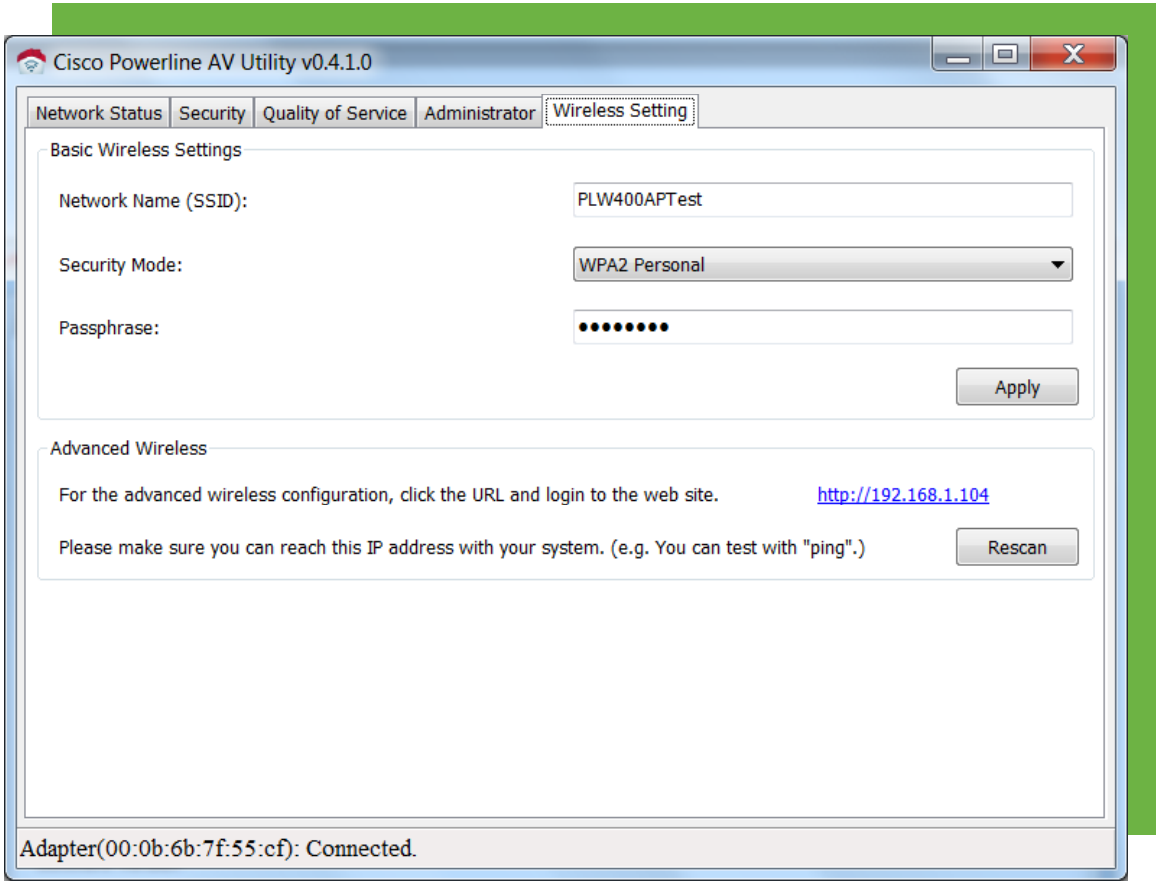
Product Utility

Wireless

- Display SSID and wireless security mode and passphrase
- Allow user to assign the PLW400 its own SSID, wireless security mode and passphrase
- URL link to login the PLW400 Web GUI



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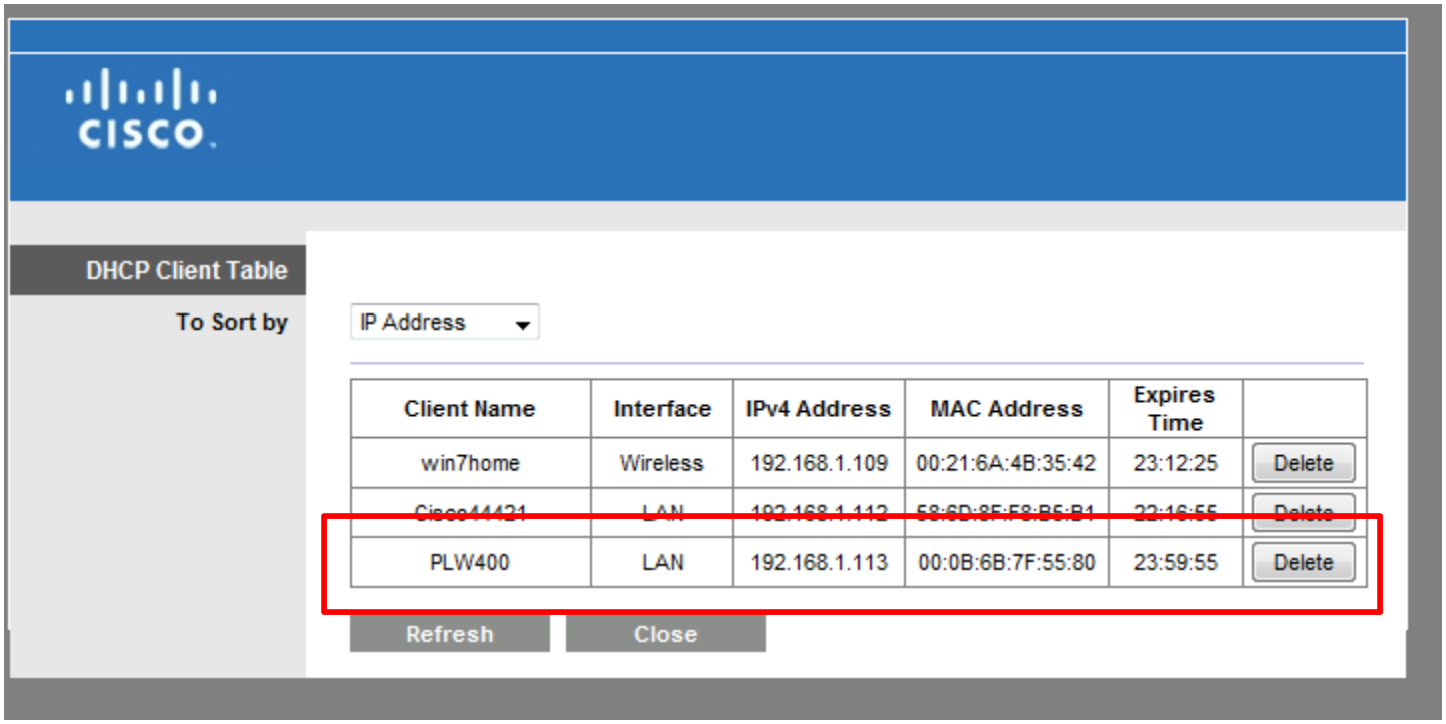
Product Utility



- After configuring the necessary settings on the product utility, moved it to the desired location in the home, and connect the laptop wirelessly.
- The screenshot above shows the PLW400 under the DHCP client table of the router.

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User Interface

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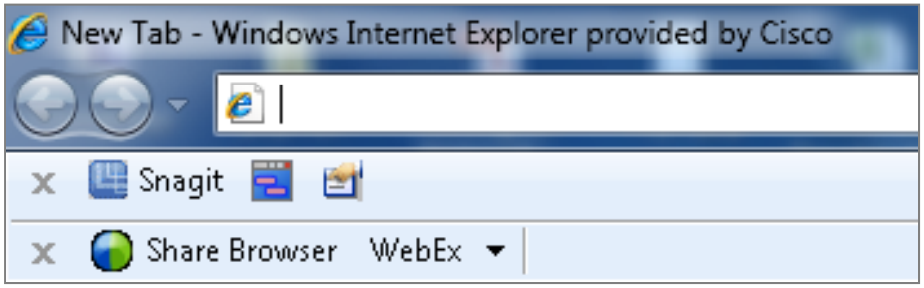
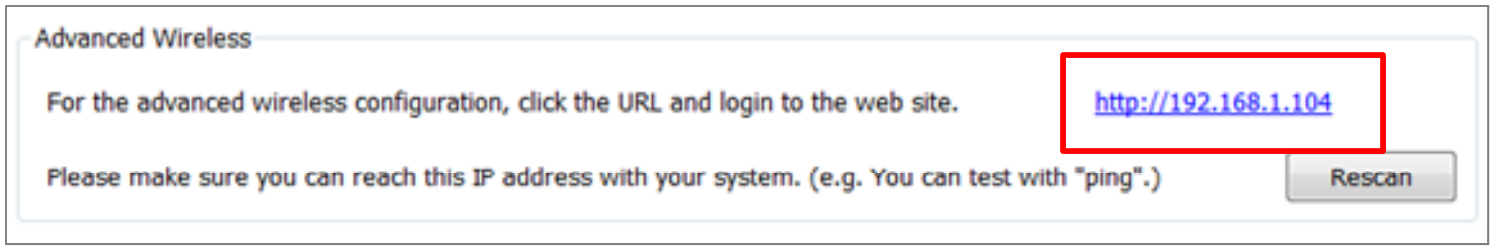
User Interface




Advanced Wireless
For the advanced wireless configuration, click the URL and login to the web site.
http://192.168.1.104
Please make sure you can reach this IP address with your system. (e.g. You can test with "ping".)
Rescan

- Enter the IP address of the PLW400. This can be found on the Wireless Setting page of the product utility.

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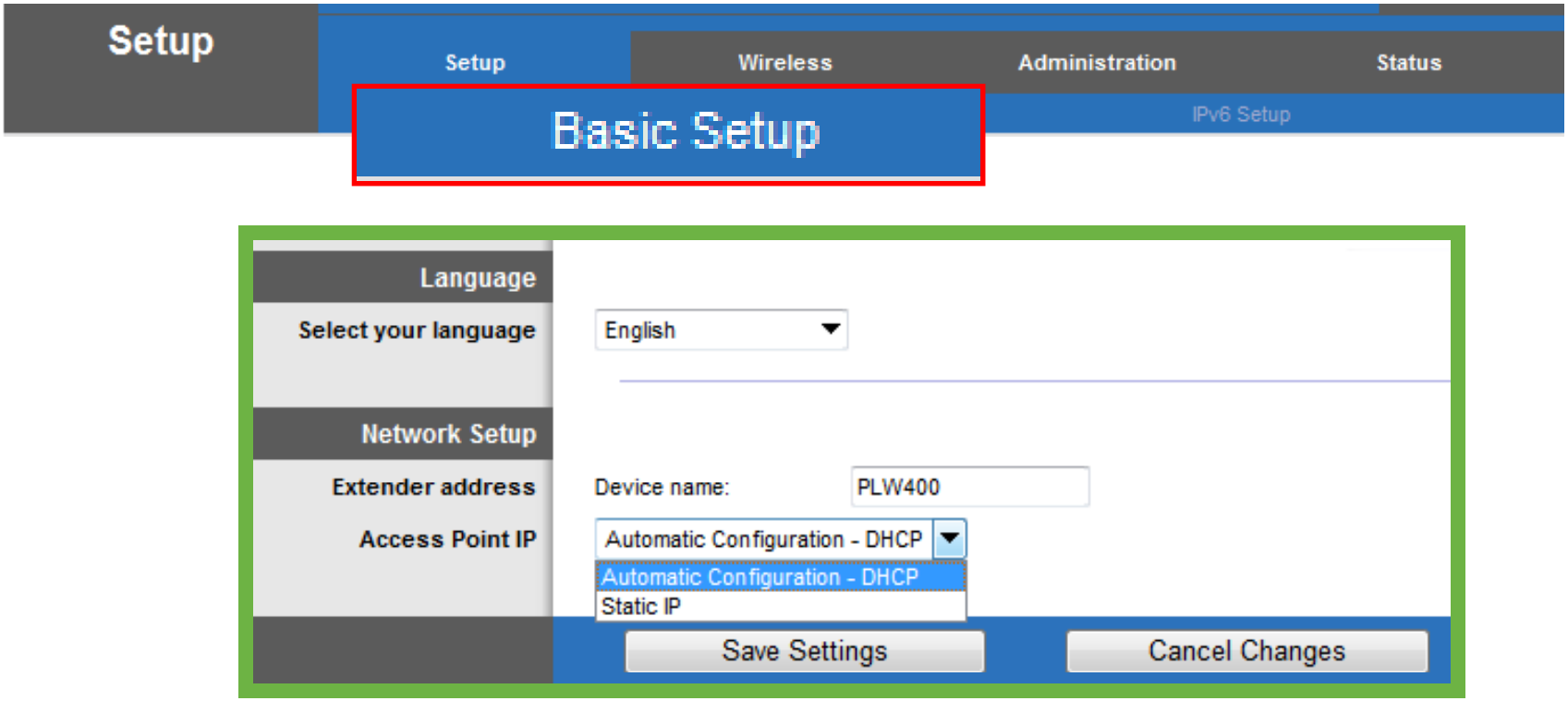
Setup > Basic Setup



- Network address of the PLW400 can be defined on this page.

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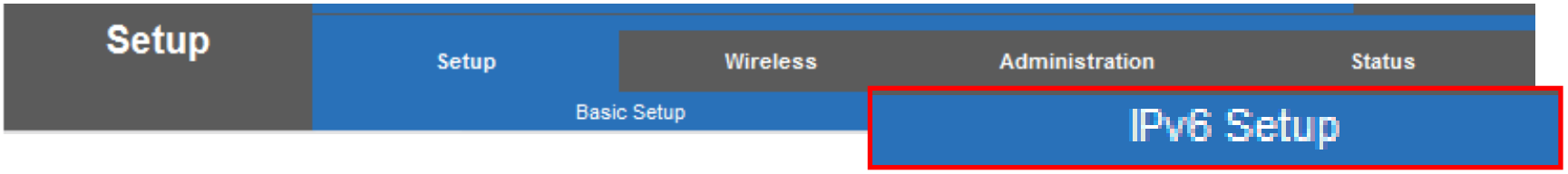
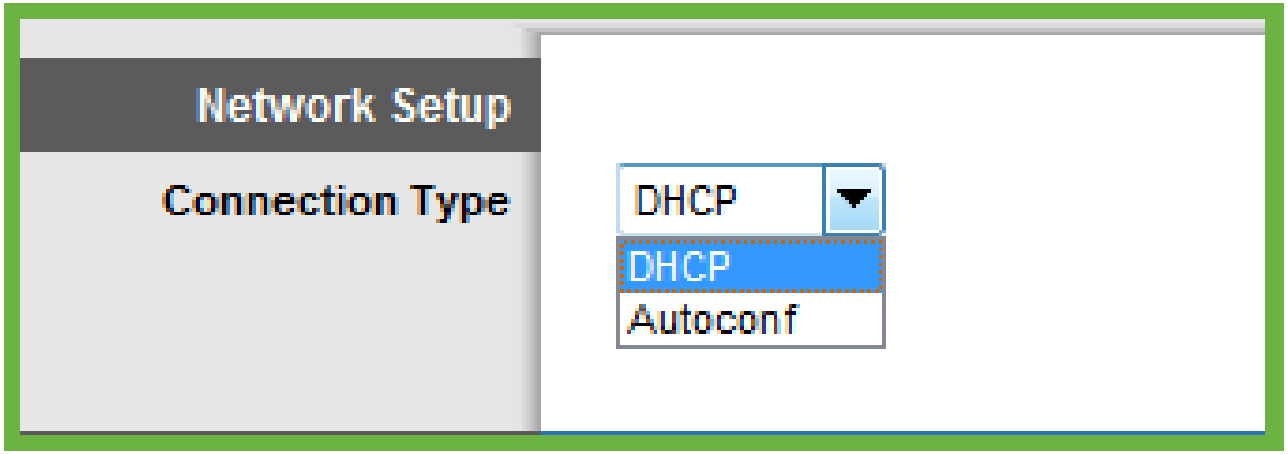
Setup > IPv6





- IPv6 Setup page

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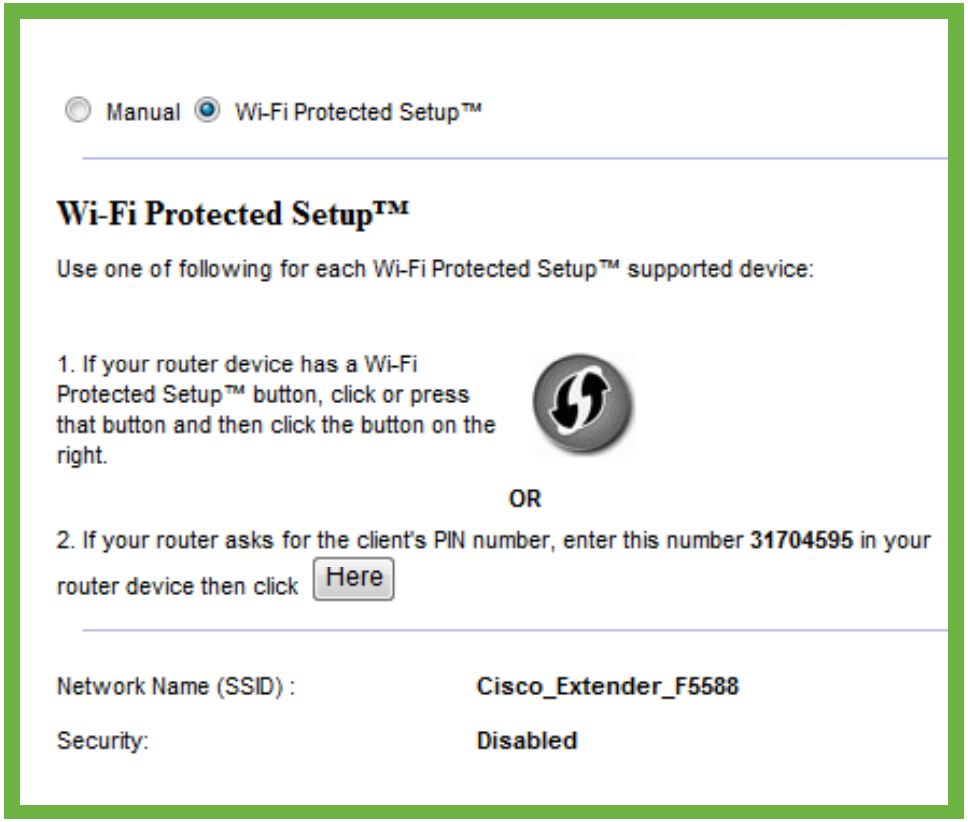
Wireless > Basic Wireless Settings

- Wi-Fi Protected Setup page


Manual
Wi-Fi Protected Setup™
Wi-Fi Protected Setup™
Use one of following for each Wi-Fi Protected Setup™ supported device:
1. If your router device has a Wi-Fi Protected Setup™ button, click or press that button and then click the button on the right.
OR
2. If your router asks for the client's PIN number, enter this number 31704595 in your router device then click
Here
Network Name (SSID) :
Cisco_Extender_F5588
Security:
Disabled

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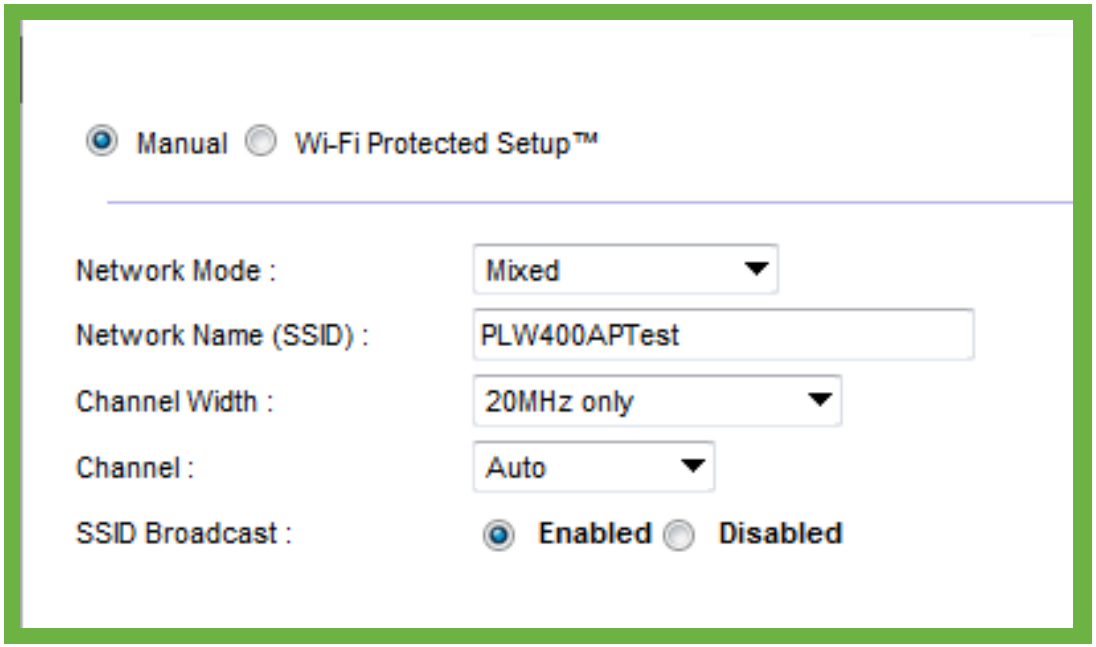
Wireless > Basic Wireless Settings

- Basic settings for wireless networking are set on this screen



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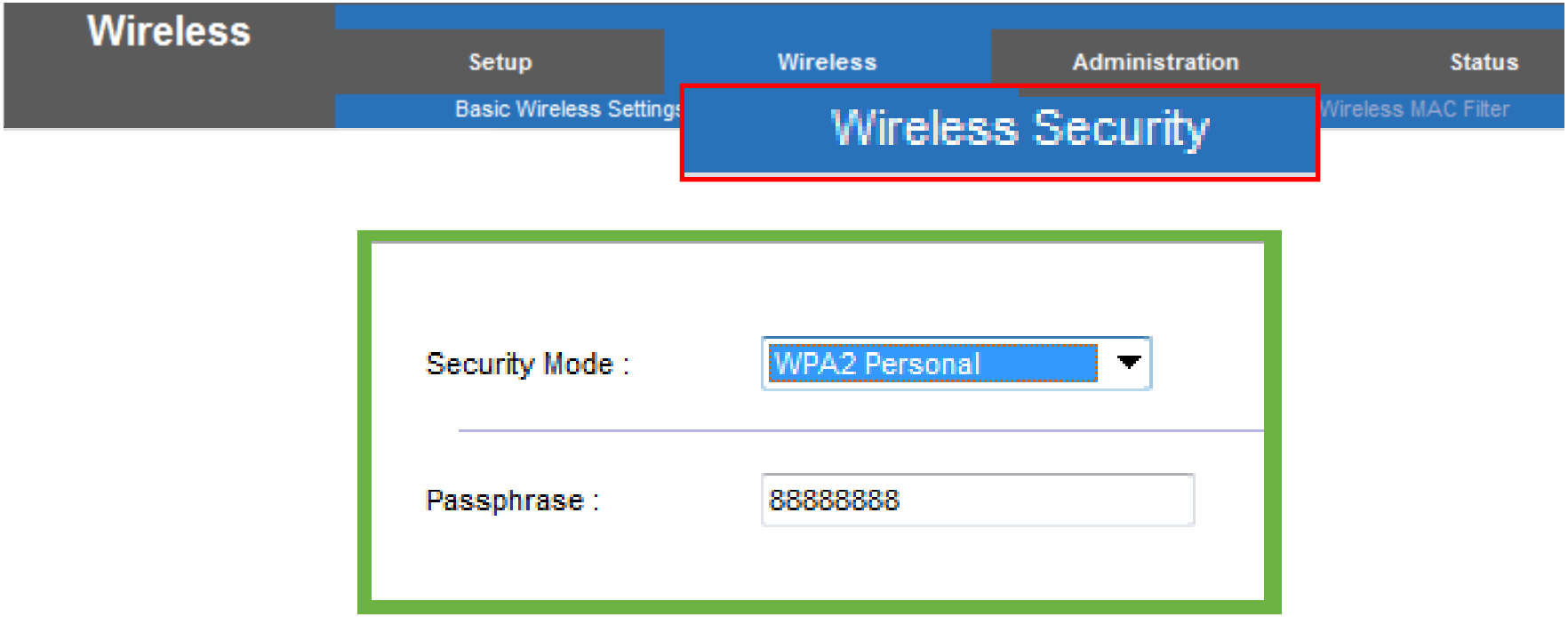
Wireless > Wireless Security



- Settings for wireless security are found on this section.

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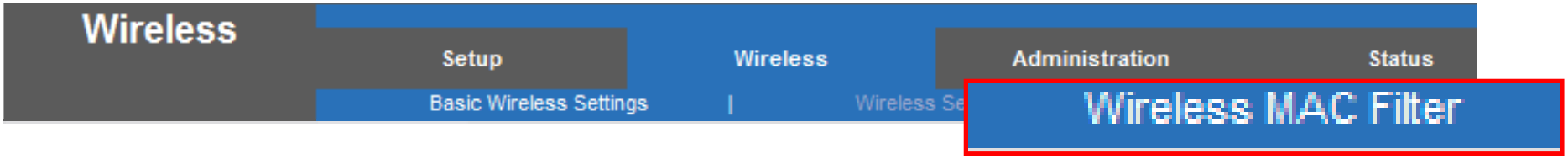
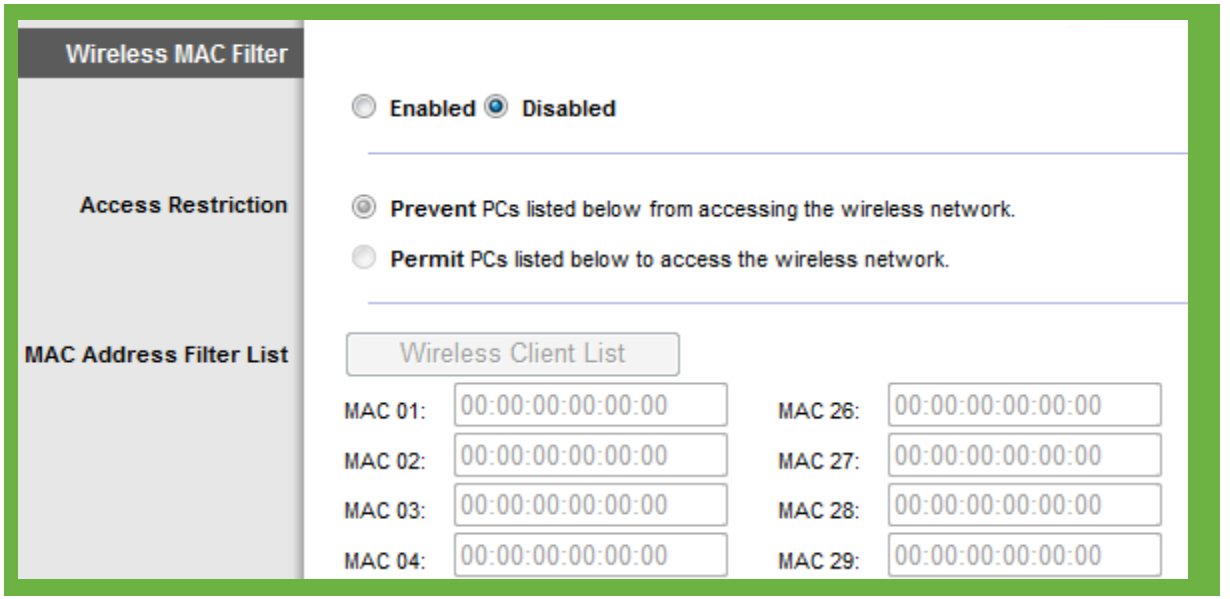
Wireless > Wireless MAC Filter



- Wireless access can be filtered by using the MAC addresses of the wireless devices transmitting within your network's range.



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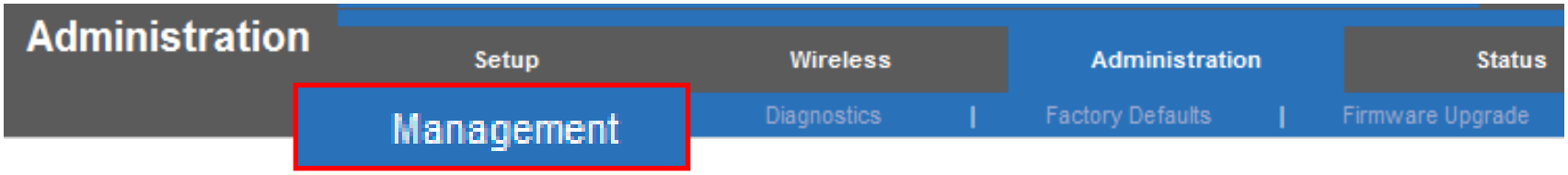
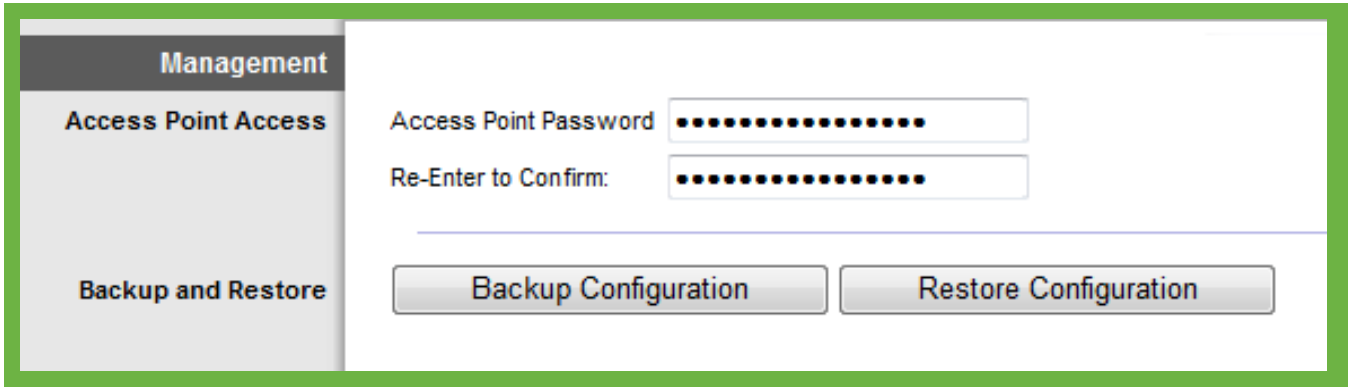
Administration > Management





- *Administration > Management* screen allows the network's administrator to manage specific powerline adapter functions for access and security

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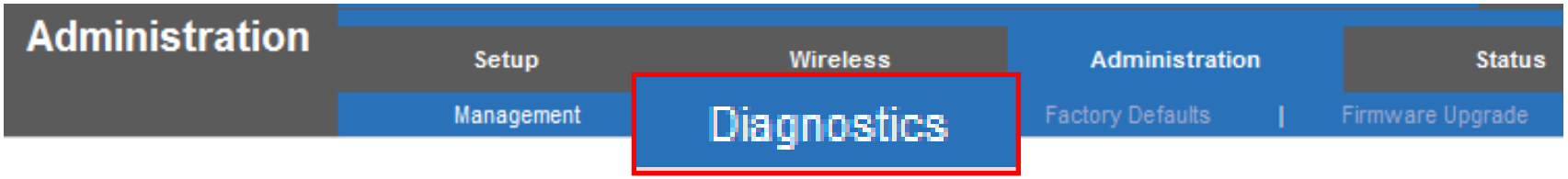
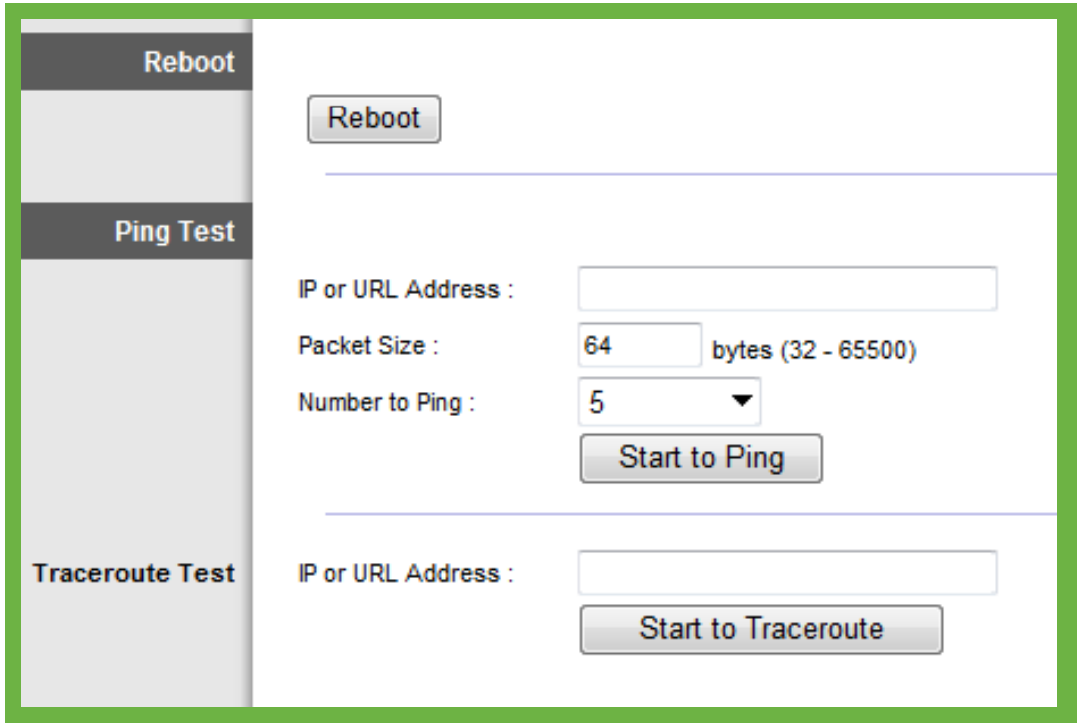
Administration > Diagnostics



- Diagnostic tests (Ping and Traceroute) allow you to check the connections of your network devices, including connection to the Internet.



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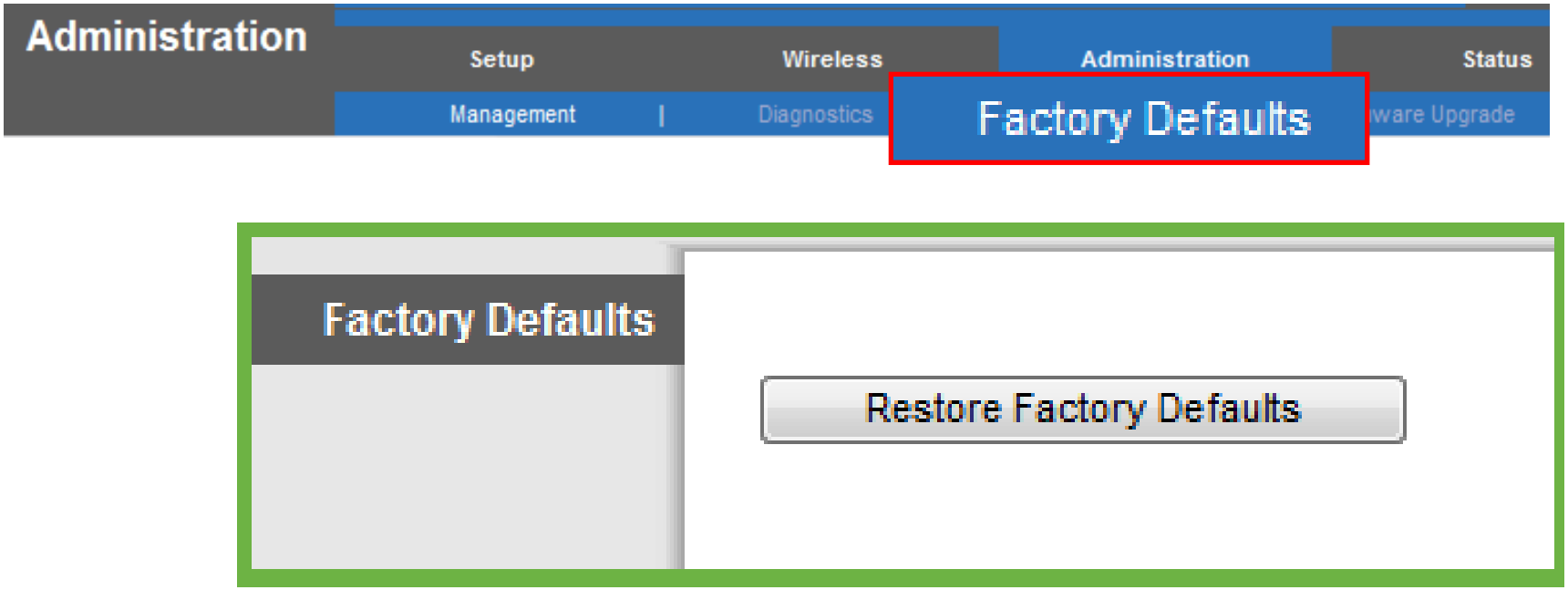
Administration > Factory Defaults



- *Administration > Factory Defaults* screen allows you to restore the powerline adapter's configuration to its factory default settings.

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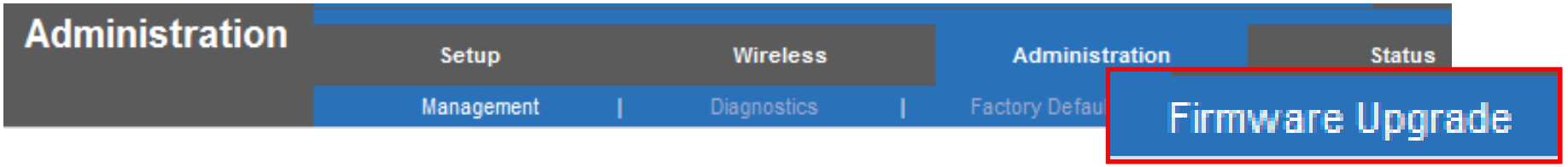
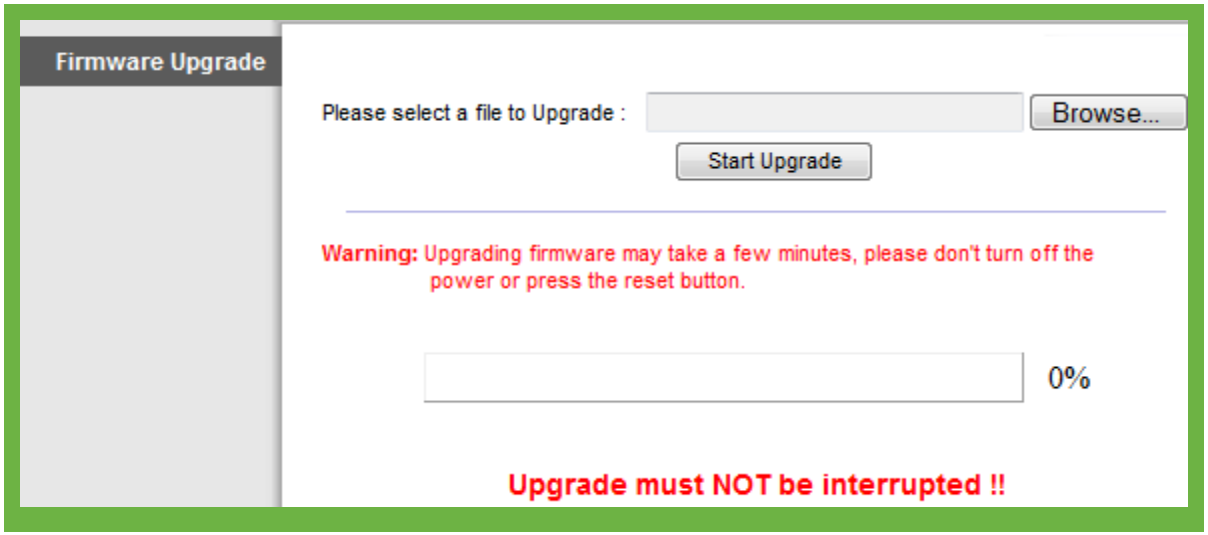
Administration > Firmware Upgrade




Firmware Upgrade
Please select a file to Upgrade :
Browse...
Start Upgrade
Warning: Upgrading firmware may take a few minutes, please don't turn off the power or press the reset button.
0%
Upgrade must NOT be interrupted !!

- *Firmware Upgrade* screen allows you to upgrade the powerline adapter's firmware.

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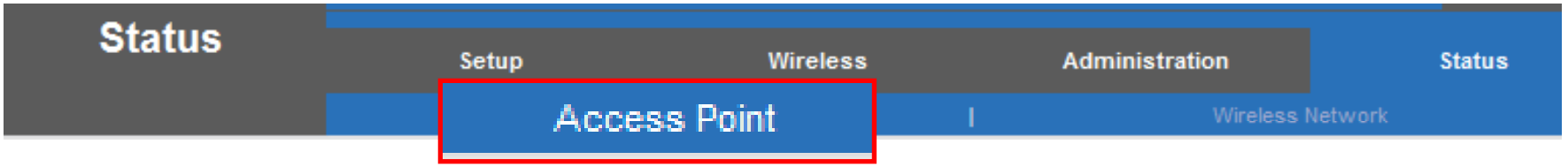
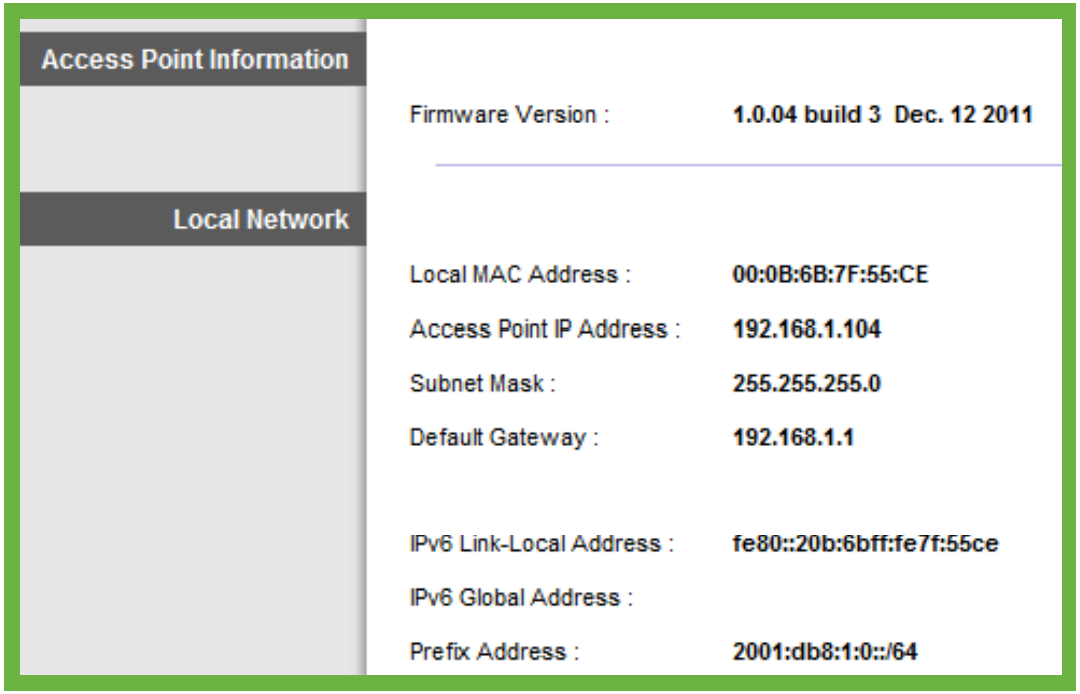
Status > Access Point



- Displays information about the access point and its current settings.


Access Point Information
Firmware Version : 1.0.04 build 3 Dec. 12 2011
Local Network
Local MAC Address : 00:0B:6B:7F:55:CE
Access Point IP Address : 192.168.1.104
Subnet Mask : 255.255.255.0
Default Gateway : 192.168.1.1
IPv6 Link-Local Address : fe80::20b:6bff:fe7f:55ce
IPv6 Global Address :
Prefix Address : 2001:db8:1:0::/64

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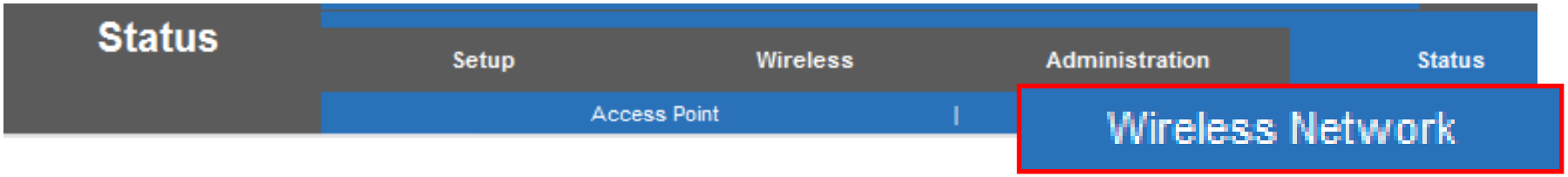
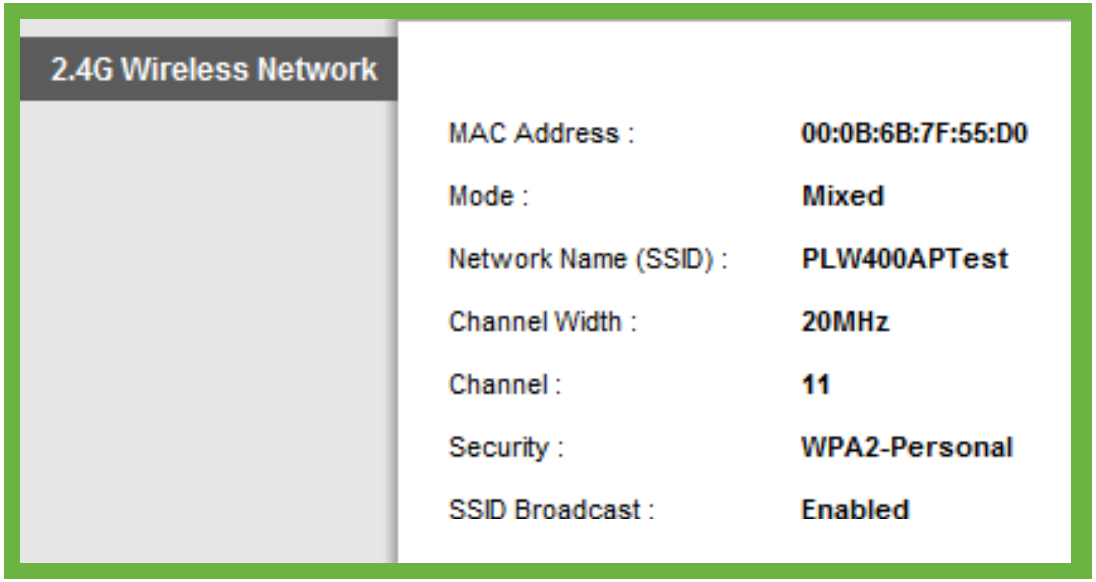
Status > Wireless Network



- Displays information about your wireless network..



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Known Issues / Recommendations

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Known Issues

By default, there is no wireless security set on the PLW400. If a customer just plugs it into their network, people could have an open access.

- User needs to setup a secure wireless network.

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Known Issues

Information on the Wireless Settings tab and Firmware Version on the Network Status tab are not available or not displayed properly when customer opens the Product Utility of the PLW400 using a wireless computer.

- Access the UI of the PLW400 from a browser
- You can plug in an Ethernet cable into the PLW400 device or router from the PC and run the utility

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Known Issues

An error “Cannot find IP” will be displayed when the customer clicks on the Wireless Settings tab of the Product Utility using a wireless computer

- You can plug in an Ethernet cable into the PLW400 device.

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Recommendation

- The product utility for the PLW400 cannot manage older Powerline devices like the PLE200/PLE300/PLTE200 units, which is due to them having a different chipset.

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Linksys EA-Series 6500 AC Router

Agenda

- Introduction to 802.11ac
- Near field communication (NFC)
- Product Overview
- Setup Experience
- New Cisco Connect Cloud Features
- Summary Comparison

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Introduction to 802.11ac

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Introduction

- The extraordinary growth in the number and type of WiFi devices, coupled with the increasing popularity of bandwidth intensive activities such as high definition video streaming, has created the demand for better performance with greater reach
- 802.11ac, the 5th generation Wi-Fi standard is designed to meet these needs.

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What is 802.11ac?

802.11ac – The 5th Generation Wi-Fi Standard

- Supports the same use cases as 802.11n which is Data, Video and Voice
- With similar range (30-100 feet)
- At Very High Throughput (VHT), the new 802.11ac standard can achieve a speed of up to 1 Gigabit+ per second

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What is 802.11ac?

802.11ac – The 5th Generation Wi-Fi Standard

- Offers more bandwidth and is less impacted by interference
- Allows you to do more at the same time, creating a better entertainment experience
- Extends the battery life of mobile devices by achieving the same transfer speed more efficiently
- AC products are compatible with all existing wireless clients

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Core New Technologies

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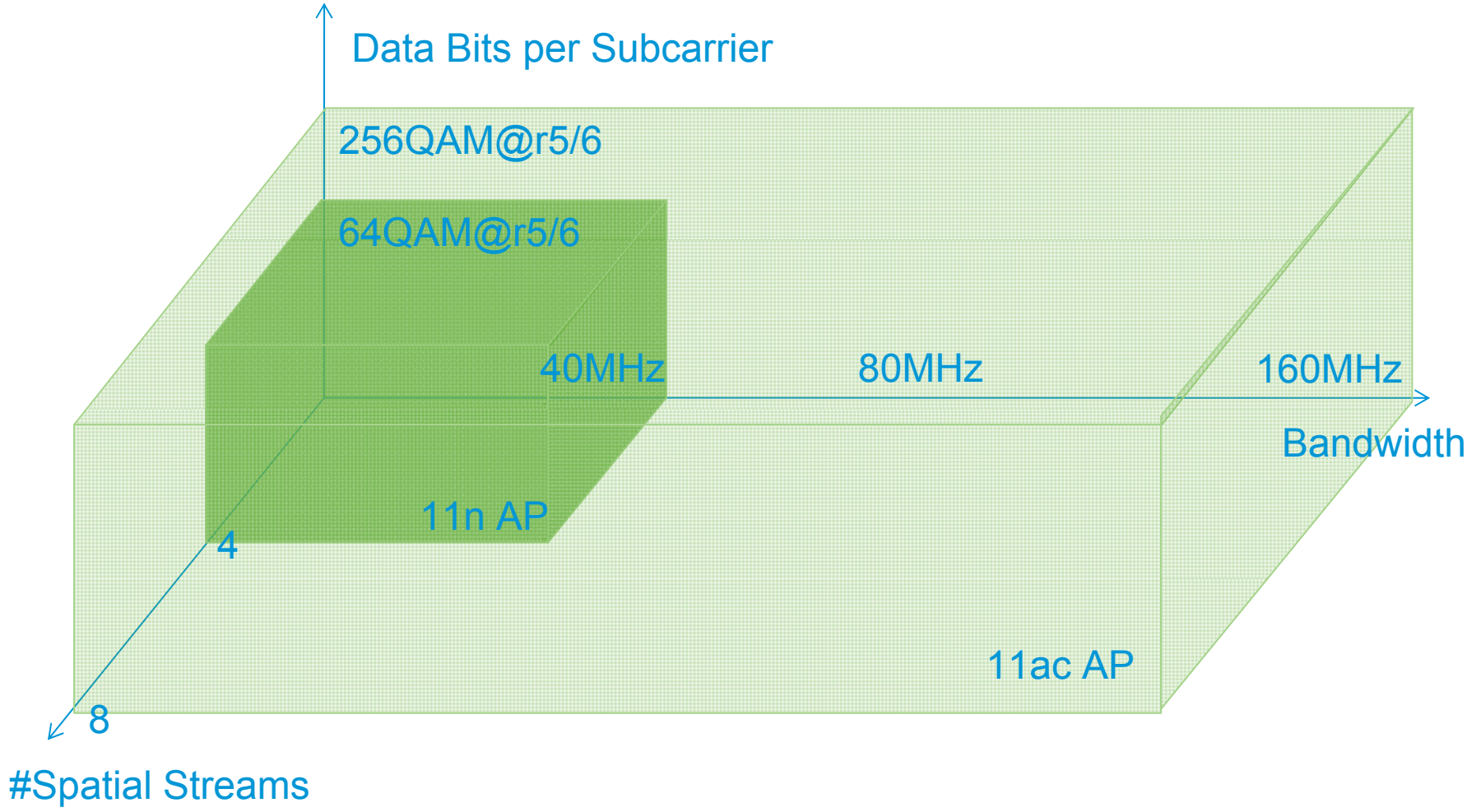
802.11ac Core Technology

How Can We Make 11n Go Faster?



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Wider Channels

802.11n: 20 and 40 MHz channels

802.11ac: 80, 160, 80+80 MHz channels

- The wider the channel, the faster data can be transferred
- i.e. a 40 MHz channel transfers 2X that of a 20 MHz channel and an 80 MHz channel transfers 4X that of a 20 MHz channel

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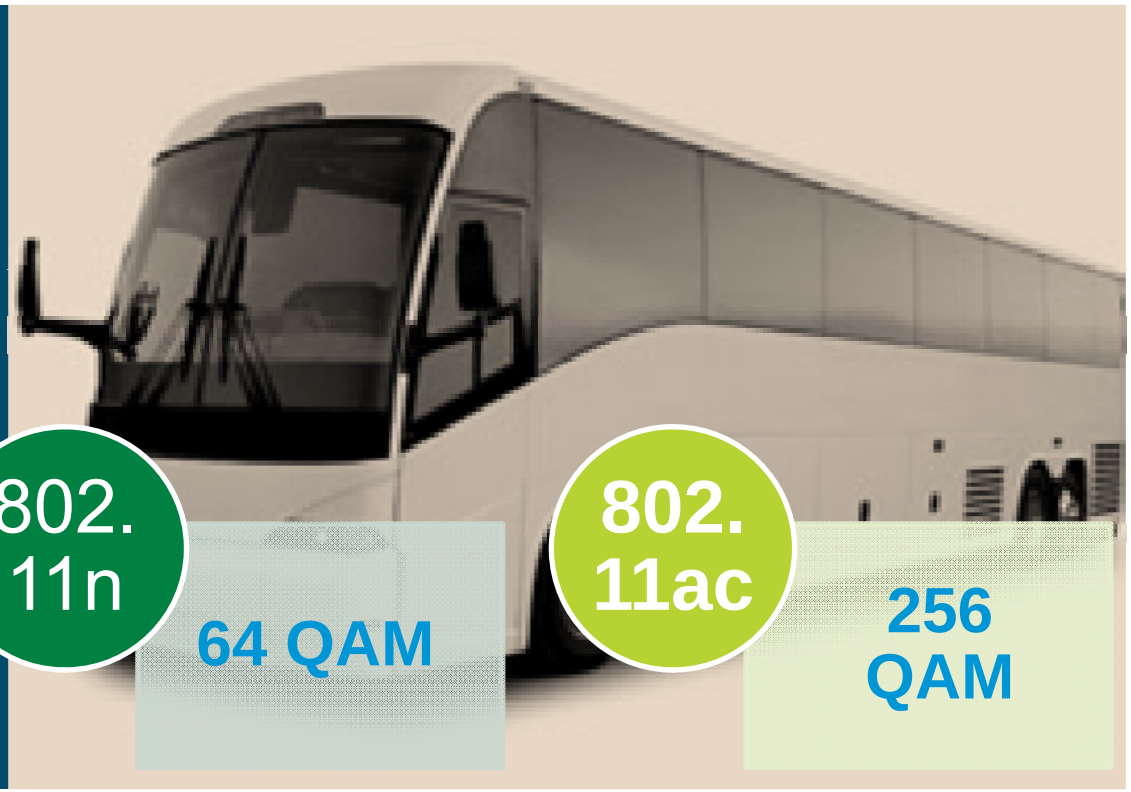
Denser Modulation

- The 802.11ac standard also takes advantage of advanced modulation techniques that allow the technology to cram more bits of data into every transmission.
- This is comparable to use of carpools and buses for transporting more people over the same number of lanes in a highway.



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More Spatial Streams

Wireless-G (802.11g) transmits and receives a single stream of data over a single channel.
Adding a second spatial stream doubles the width of the 20 MHz channel.
Adding a second 20 MHz highway with two more spatial streams, and you get the speed of Wireless-N (802.11n)!
802.11n offers 1-4 spatial streams

- IEEE 802.11ac translates MIMO up to eight (8) spatial streams, versus the four of 802.11n. Thus, increased spatial streams should be delivered at a considerably higher throughput than current IEEE 802.11n provisions.

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Cool New Technologies

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Multi-User MIMO (MU-MIMO)

802.11n: SU-MIMO
Total Data Rate: 433 Mbps

- In a normal MIMO environment, devices compete for channel use in a non-cooperative manner. Early 802.11ac clients will be predominantly tablets and smart phones. The clients will have 1x1 802.11ac radios, limiting them to 433Mbps. In single user MIMO, the total data rate of the network will be 433 Mbps.

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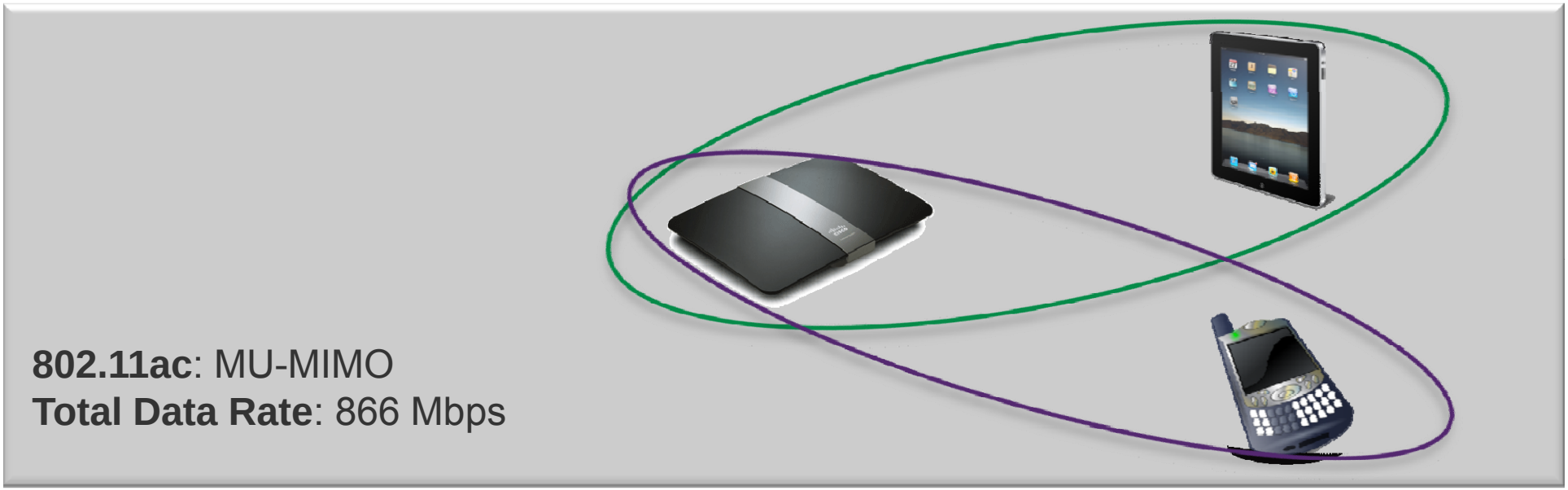
Multi-User MIMO (MU-MIMO)



- MU-MIMO uses spatial multiplexing to direct spatial streams in the same channel to different receivers, allowing for more efficient use of the channel. Two 1x1 802.11ac device will each have its own 433Mbps data rate spatial stream, bringing the total network data rate to 866Mbps

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Beamforming Mechanism

- Beamforming provides directional signal transmission and reception.
- Previous standards can only receive and transmit omnidirectional signals, which are subject to significant levels of interference, due to the fact that the signals are transmitted indiscriminately in every possible direction.

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Beamforming Mechanism

- With beamforming, there's an understanding of the relative location of the device, and the signal is correspondingly strengthened in that direction

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Reliability

- Homes and apartments now plagued with "dead spots" will enjoy vastly improved reception. But 802.11ac networks, with beam-forming and other innovations, do a much better job in penetrating all forms of building materials, including concrete than its predecessors.

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802.11ac Coverage

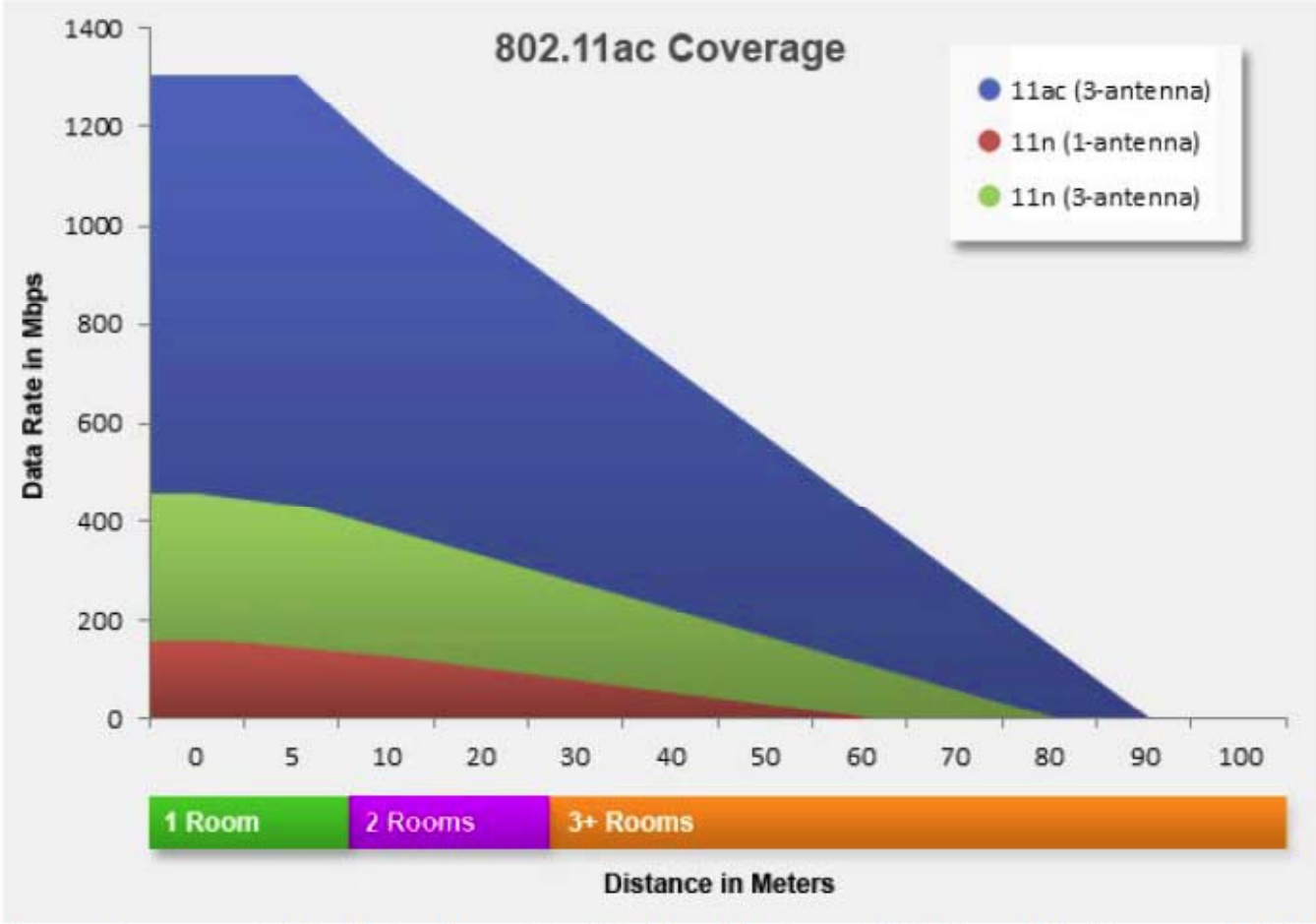

Figure: Approximate Data Rates (throughput) for 1 and 3 antenna 802.11n, and for 3-antenna 802.11ac

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video

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Summary Comparison

	802.11n	802.11ac
Throughput	Up to 450 Mbps	Up to 1 Gbps
Channel Width	20 MHz and 40 MHz channels	80, 160, 80+80 MHz channels**
Modulation	64 QAM	256 QAM
Number of Spatial Stream	1-4	1-8**
Beamforming Mechanism	No	Yes
RF Band	2.4 GHz or 5 GHz	5 GHz only

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Near field communication (NFC)

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What is Near field communication (NFC)?

Near field communication (NFC)

- **Near field communication** (**NFC**) is a set of standards for smartphones and similar devices to establish radio communication with each other by touching them together or bringing them into close proximity, usually no more than a few centimeters. Present and anticipated applications include contactless transactions, data exchange, and simplified setup of more complex communications such as WI-FI

**Technology is used for the SimpleTap feature in EA6500, supported NFC Android phones

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NFC in action

- NFC technology has the power to bring new simplicity and convenience to many aspects of a typical person's daily life, as this example illustrates
- NFC Forum

  http://www.nfc-forum.org

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Definitions

- Mb: megabits per second; MB: megabytes per second
- Channel width: how much radio frequency is used by a channel; the wider the channel, the faster data can be transferred, i.e. a 40 MHz channel transfers 2x that of a 20 MHz channel and an 80 MHz channel 4x a 20 MHz channel.
- PHY rate: speed of raw channel without the overhead of media access protocol, i.e. Gigabit Ethernet is 1000 Mb
- Data rate: speed user data is transferred, i.e. Gigabit Ethernet is ~ 650 Mb. There is about 35% overhead for protocol, error correction, etc. (1000 Mb PHY rate – 350 Mb overhead = 650 Mb data rate).

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Definitions con't

- Spatial stream: unique simultaneous data stream
- Each spatial stream has a PHY rate of 150 Mb: 1x1 = 150 Mb, 2x2 = 300 Mb, 3x3 = 450 Mb
- Example: "N900" has 3 spatial streams (3x3) at 5 GHz and 3 spatial streams (3x3) at 2.4 GHz. So, it has a 450 Mb PHY rate at 5 GHz and a 450 Mb PHY rate at 2.4 GHz for a total PHY rate of 900 Mb, thus the name "N900".
- Beamforming: control the output characteristics of each transmitter so that the overall signal is optimized to reach a given receiver in a given direction.

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Product Overview

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Product Family Overview

NEW
APP ENABLED

Linksys EA6500

Linksys EA4500

Linksys EA3500

Linksys EA2700

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Major Features

Model	EA2700	EA3500	EA4500	EA6500
Wireless speed	Up to 300Mbps	300Mbps (2.4GHz) 450 Mbps (5GHz)	Up to 450 Mbps + 450 Mbps	450Mbps (2.4GHz) 1.3Gbps (5GHz)
Ethernet Ports x Speed	4 x 10/100/ 1000	4 x 10/100/ 1000	4 x 10/100/ 1000	4 x 10/100/ 1000
TX/RX	2 internal antennas each for 2.4GHz and 5GHz	2TX x 3RX for 2.4Ghz 3TX x 3RX for 5Ghz	3TX x 3RX for 2.4Ghz 3TX x 3RX 5Ghz	3TX x 3RX for 2.4Ghz 3TX x 3RX 5Ghz
Bands	Dual band (2.4GHz and 5GHz)	Dual band (2.4GHz and 5GHz)	Dual band (2.4GHz and 5GHz)	Dual band (2.4GHz and 5GHz)

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Major Features

Model	EA2700	EA3500	EA4500	EA6500
Parental Controls (Basic)	Supported	Supported	Supported	Supported
Guest Access	Supported	Supported	Supported	Supported
USB port	Not available	Available (capable of supporting one external HD or USB printer)	Available (capable of supporting one external HD or USB printer)	Available (Dual USB ports to connect 2 hard drives or 2 printers or one of each.)
NFC	Not Supported	Not Supported	Not Supported	Supported for Android NFC Phones

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Major Features

EA6500

- ✓ Draft 802.11ac (Compatible with a/b/g/n)
- ✓ Local Access UI (Option to Opt Out of cloud services, no cloud account required)
- ✓ Cisco Connect Cloud services support
- ✓ 2 USB 2.0 port (Simultaneous):
- ✓ Printing (Virtual USB)
- ✓ Storage Link (FAT, FAT32, NTFS, HFS+ journaled & non-journaled)
- ✓ SimpleTap Technology (NFC)
- ✓ Cisco Connect Cloud mobile app with SimpleTap
- ✓ Simultaneous Dual Band: MIMO 3x3 (2.4Ghz) and MIMO 3x3 (5Ghz)
- ✓ Data rates up to 450 Mbps on 2.4 GHz (3 spatial streams)
- ✓ Data rates up to 1.3 Gbps on 5 GHz (3 spatial streams)
- ✓ 4x Gigabit LAN ports + 1 WAN Gigabit port
- ✓ IPv6 support
- ✓ DLNA 1.5 certified
- ✓ UPnP Media Server
- ✓ Wall mountable router

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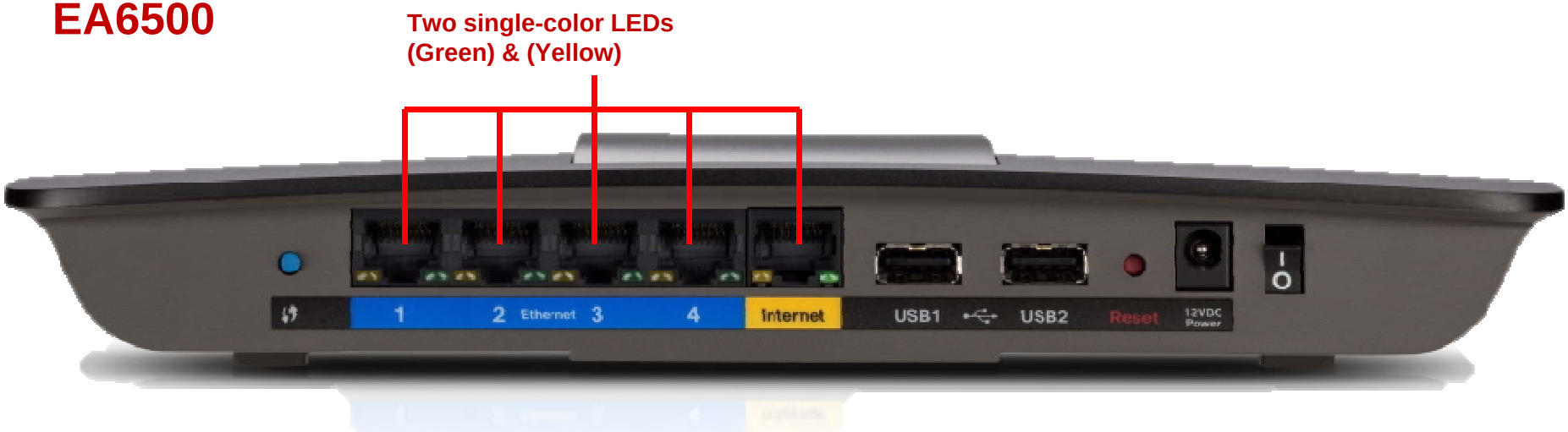
LED Status

EA6500



LED	COLOR	ACTIVITY	DESCRIPTION
Two single-color LEDs corresponding to each Ethernet port to indicate link status	Green	Off	No physical link on the LAN port
		Solid (green)	Physical link is up
	Yellow	Flashing (yellow)	Data is transmitting through this port

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LED Status

EA6500

LED	COLOR	ACTIVITY	DESCRIPTION
Power (Cisco logo)	White	Off	Power off
		Solid	Power on / Device is ready / WPS is successful
		Blinking	Reboot due to failed FW upgrade / WPS PBC session overlap or error (up to 120 seconds)
		Pulsing (fast)	Booting / System self-test / Firmware upgrade
		Pulsing (slow)	WPS in progress (up to 120 seconds)

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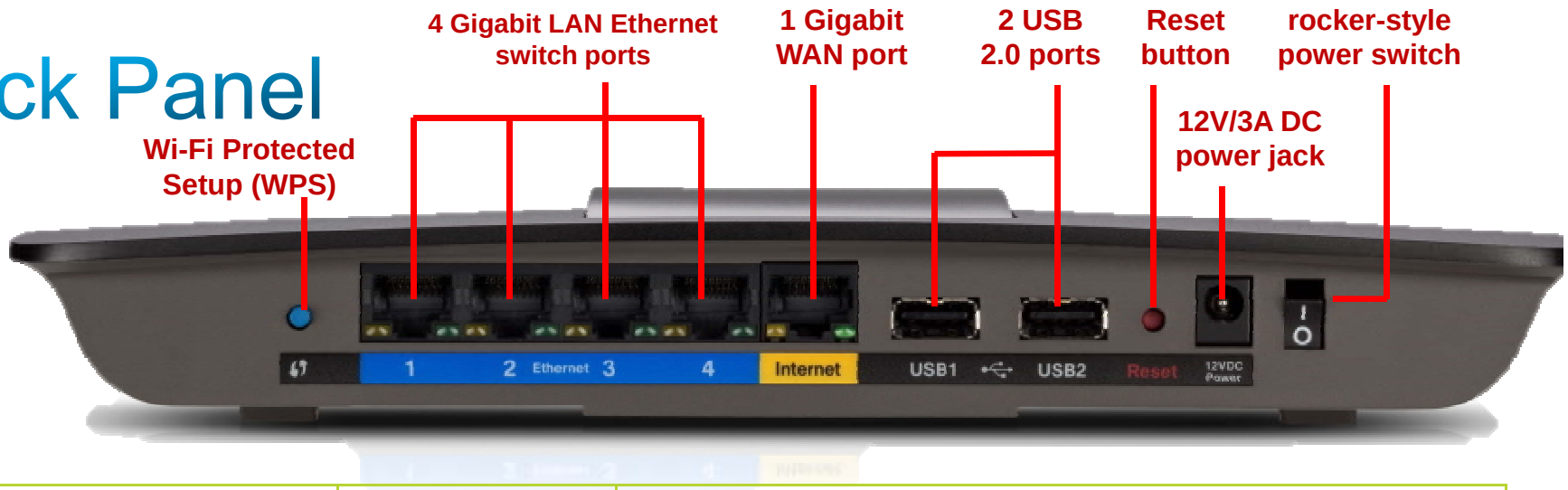
Back Panel



Port	EA6500	DESCRIPTION
Ethernet	4	10/100/1000 RJ45 LAN port with auto-MDIX
Internet	1	10/100/1000 RJ45 Internet port with auto-MDIX
USB	2	USB Port
Wi-Fi Protected Setup (blue)	1	Wi-Fi Protected Setup push button.
Reset	1	Reset button. Press and hold about 5-10 seconds to reset settings to factory default.

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Setup Experience

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Setup Experience

- Firmware shipping with router
  - Does not support dual USB storage
  - Does not support cloud services
  - Limited widgets only (Offline and Online)
- Setup CD will update firmware to load all features.
- Manual setup will prompt customer to download and update firmware. Once firmware is updated it will include support for all items mentioned above.
- So long as router has internet connection during setup software, it will detect the upgrade and install it, it’s part of the installation.

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Setup CD/Software Experience

Online (Setup software successfully detects Internet connection)

1. Software sets up the Internet connection
2. Setup wireless network
3. Detects update and downloads it.
4. Option to create CCC account.

Offline

1. Software detects no WAN connectivity and prompts to check WAN connection and goes through troubleshooting. If router gets online steps 2-4 above are completed, otherwise Setup prompts customer to contact Support.

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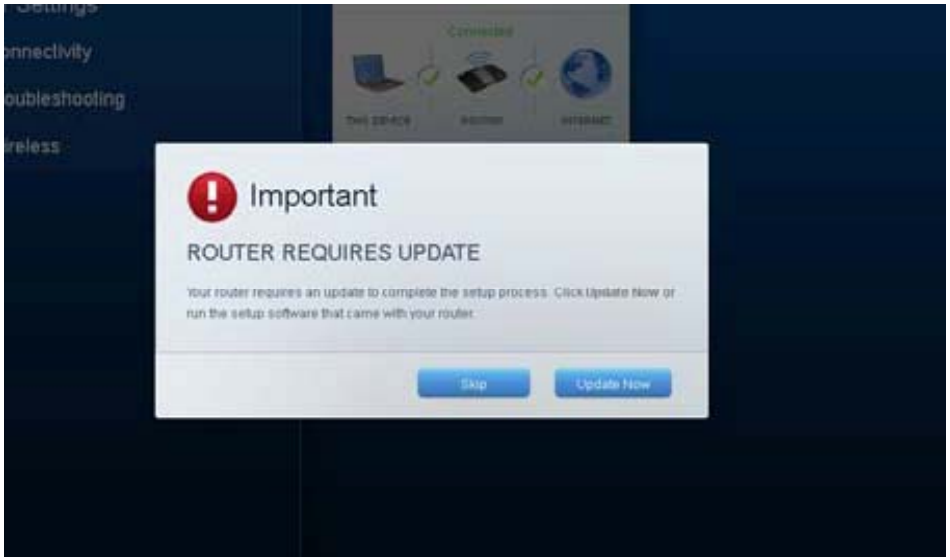
Manual Setup Experience

Online

1. Opening UI by entering “myrouter.local” in the address bar of browser
2. Access Router admin password prompt
3. Prompt for required update (Prompt will come up once router has been manually configured for Internet connection, otherwise the user will not see the prompt)


Important
ROUTER REQUIRES UPDATE
Your router requires an update to complete the setup process. Click Update Now or run the setup software that came with your router.
Skip
Update Now

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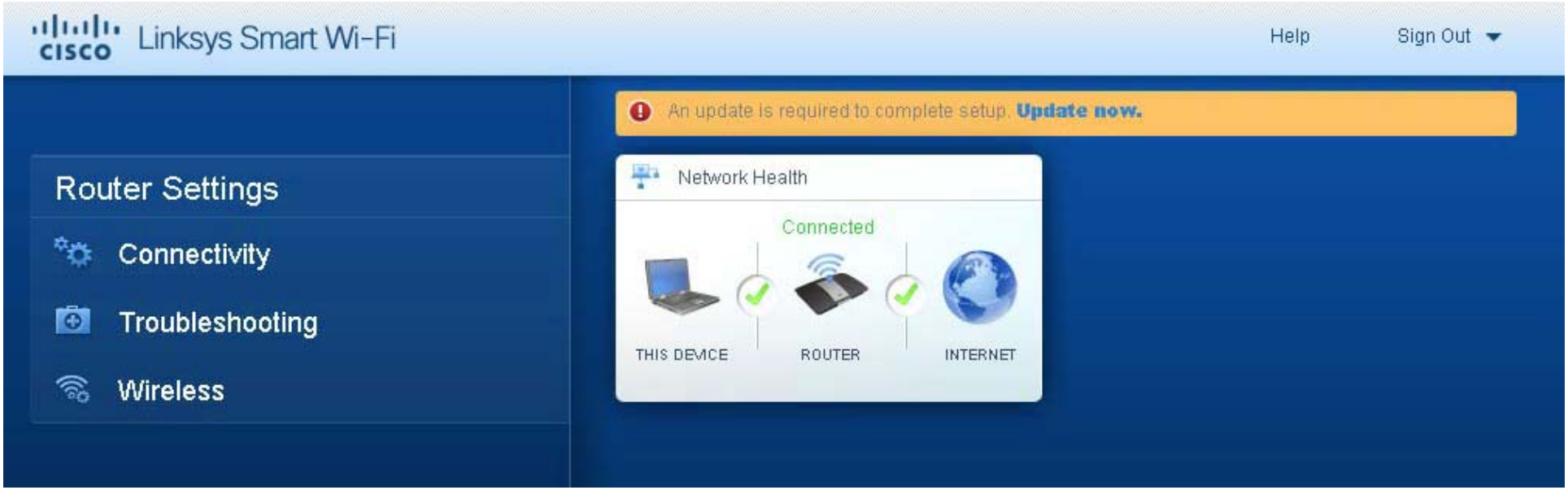
Manual Setup Experience cont.

Online

a. **Skip** - returns user to limited UI with an orange banner on the top



b. **Update Now** - updates firmware on the router with added support for cloud services and dual USB support.

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Manual Setup Experience

Offline

1. Opening UI by entering “myrouter.local” in the address bar of browser
2. Prompts for router admin password “Access Router”
3. Access to limited UI (No Update firmware messaging since router is not online)

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LINKSYS

Module 4:
Linksys Smart Wi-Fi Routers
Account / Tools / Apps

Vincent Besrechel

08/07/2013 v1.5

Linksys Smart Wi-Fi explained (V)

- Combination of Powerful hardware performance and intelligence in one package
- Enables consumers to stay anywhere, anytime connected to their devices and home networks

Linksys Smart wifi allows you to access your network from any browser or from an app on your mobile device- Smartphone or tablet.

With Linskys smart wifi you can get apps that will give you access to you home network and new capabilities in just a few clicks

- New Central Hub or brain of home network supporting today's modern home
- Simplifies home control, entertainment, security and internet access through innovative easy to use features and growing application and partner ecosystem.

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Linksys Smart Wi-Fi

Great performance and experiences in one

Linksys Smart Wi-Fi Account + Mobile Apps

Linksys Smart Wi-Fi Router N600/N750/900	Linksys Smart Wi-Fi Router AC1200	Linksys Smart Wi-Fi Router AC1600	Linksys Smart Wi-Fi Router AC1750
EA2700/3500/4500	**EA6300**	**EA6400**	**EA6700**

Linksys Smart Wi-Fi Advantage

Great Connected Experiences

Simple & Intuitive

Connect Anywhere

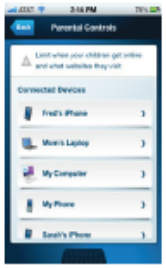
Apps to Do More

Connected Home Today & Tomorrow

Software, cloud, partners, high-performance hardware

LINKSYS

Linksys Smart Wi-Fi Tools

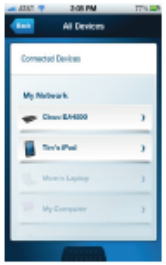


Parental Control

Use a web browser, mobile phone or tablet to restrict access to specific web sites or block the Internet during certain times of day.

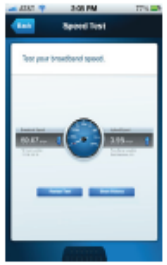
Guest Access

Tap to get a unique, secure network password for letting your guests access the Internet.



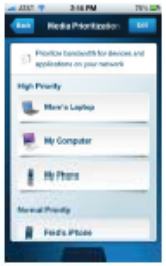
See & Add Devices

View what devices are connected to your network and easily add new ones.



Speed Test

Quickly learn how your home network is performing by checking upload and download speeds.



Media Prioritisation

Reduce lag times and buffering by prioritizing which devices get the most bandwidth.

USB Storage

Expand the capacity and capabilities of your home network by attaching a USB storage device.

Linksys Smart Wi-Fi Apps

Block the Bad Stuff

Easily add one of three levels of protective filtering to your wireless network with the Block the Bad Stuff app, developed for Linksys Smart Wi-Fi Router owners.

Gemini IP Camera Viewer

The Gemini IP Camera Viewer app developed for Linksys Smart Wi-Fi Router owners work on your iPhone and offers quick and easy access to IP Camera M-JPEG video streams over Wi-Fi and GSM networks.

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NetProofer

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And This is Just Beginning

Linksys Developer Community now open!

How to get Linksys Smart Wi-Fi

STEP 1

Create your wireless home network

All Linksys Smart Wi-Fi Routers are enabled for Linksys Smart Wi-Fi Tools and they make it simple to set up your wireless home network.

STEP 2

Register your network online

Go to **www.linksyssmartwifi.com** to open a new account. Once you've registered, you can use your laptop, smartphone or tablet to access your home network anytime, anywhere[1].

STEP 3

Customize with Linksys Smart Wi-Fi Tools

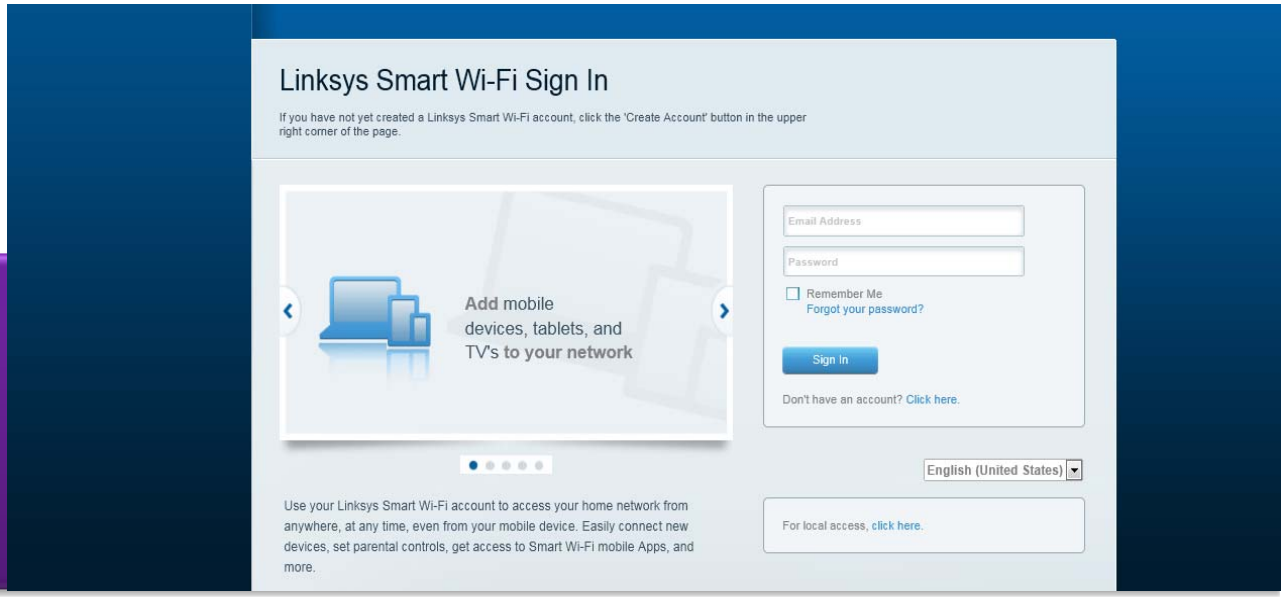
Customise your conncted home with Linksys Smart Wi-Fi Tools made especially for your devices and smart appliances. At **www.linksyssmartwifi.com**, you'll find an ever-expanding array of apps for making a smarter home that you can run anytime, anywhere[1].

Linksys Smart Wi-Fi

- Easily connect devices
- Media prioritisation
- Manage parental controls and guest access
- Remote access to home anywhere, anytime[1]
- Install apps for more features

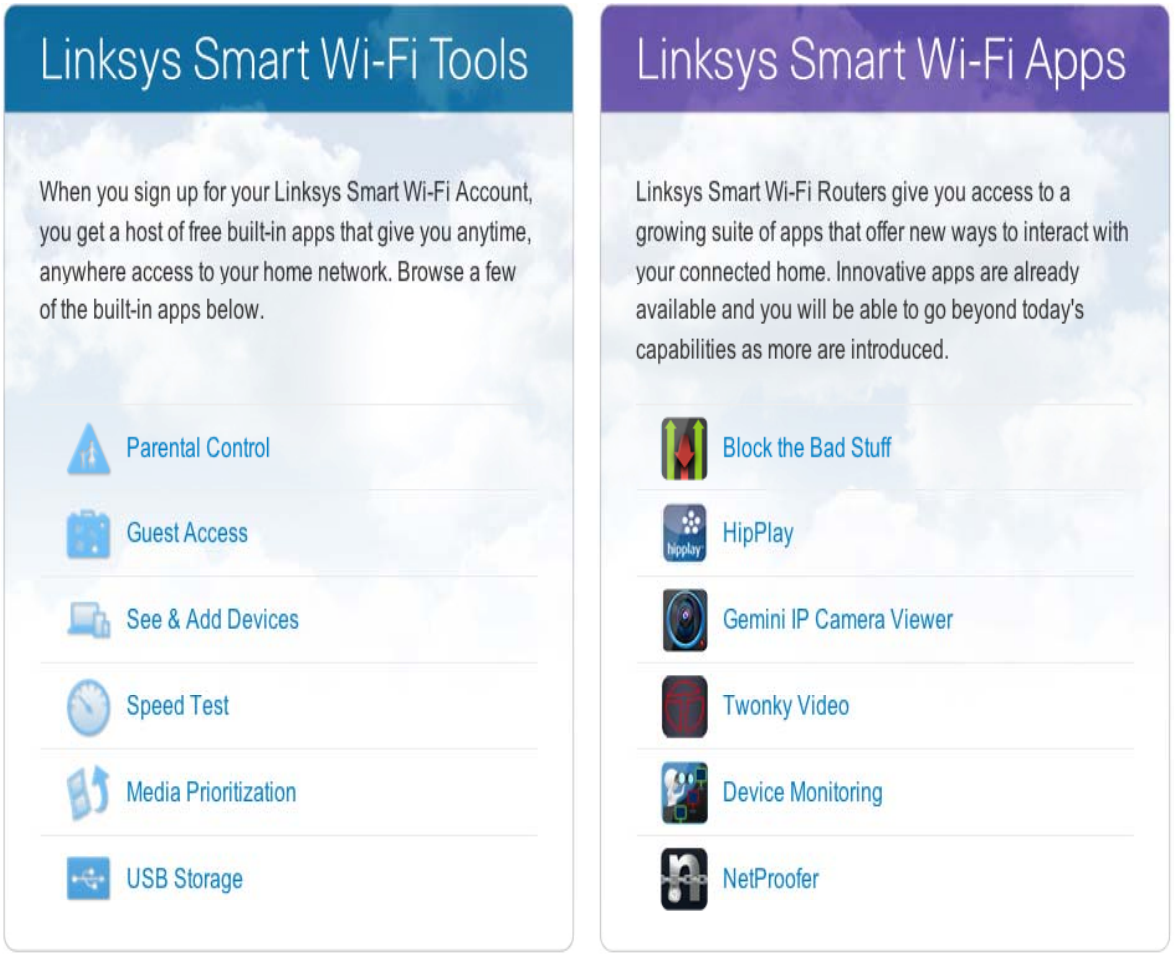
Linksys Smart Wi-Fi Account

Create a Linksys Smart Wi-Fi Account


Linksys Smart Wi-Fi Sign In
If you have not yet created a Linksys Smart Wi-Fi account, click the 'Create Account' button in the upper right corner of the page.
Add mobile devices, tablets, and TV's to your network
Email Address
Password
Remember Me
Forgot your password?
Sign In
Don't have an account? Click here.
English (United States)
Use your Linksys Smart Wi-Fi account to access your home network from anywhere, at any time, even from your mobile device. Easily connect new devices, set parental controls, get access to Smart Wi-Fi mobile Apps, and more.
For local access, click here.

- Click the Create Account button in the upper right corner of the screen.

Linksys Smart Wi-Fi tools and Apps


Linksys Smart Wi-Fi Tools
When you sign up for your Linksys Smart Wi-Fi Account, you get a host of free built-in apps that give you anytime, anywhere access to your home network. Browse a few of the built-in apps below.
Parental Control
Guest Access
See & Add Devices
Speed Test
Media Prioritization
USB Storage
Linksys Smart Wi-Fi Apps
Linksys Smart Wi-Fi Routers give you access to a growing suite of apps that offer new ways to interact with your connected home. Innovative apps are already available and you will be able to go beyond today's capabilities as more are introduced.
Block the Bad Stuff
HipPlay
Gemini IP Camera Viewer
Twonky Video
Device Monitoring
NetProofer

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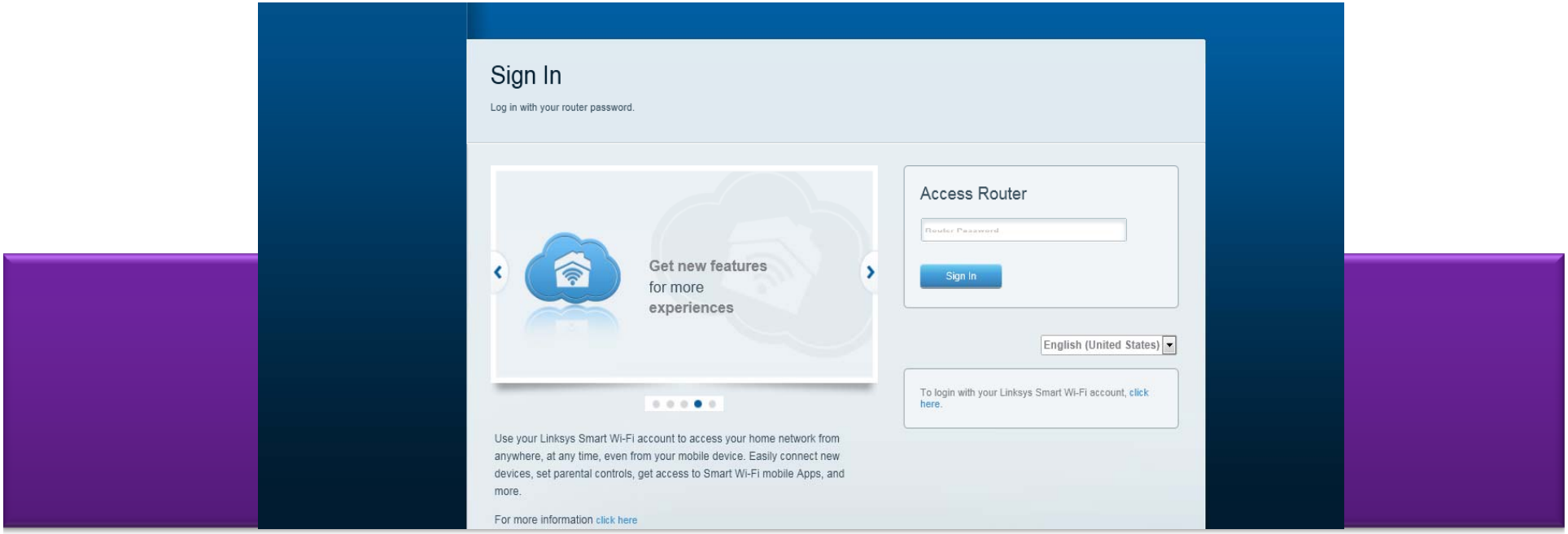
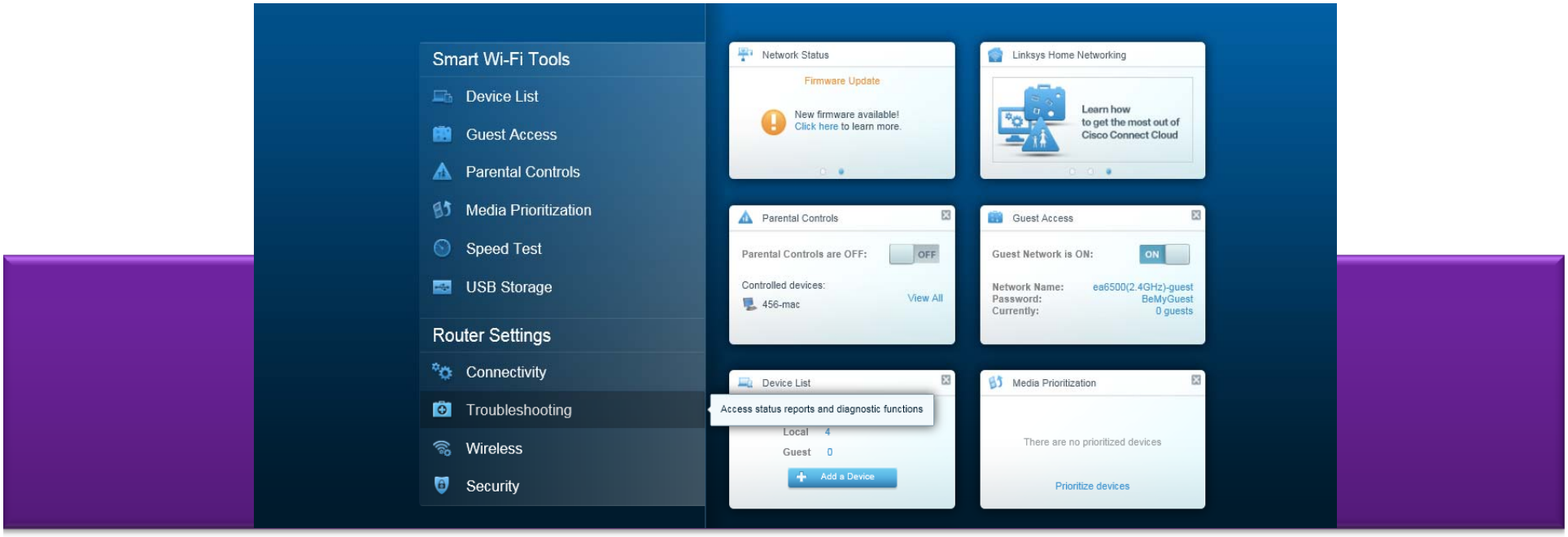
Linksys Smart Wi-Fi Account


Sign In
Log in with your router password.
Get new features
for more
experiences
Access Router
Sign In
English (United States)
To login with your Linksys Smart Wi-Fi account, click here.
Use your Linksys Smart Wi-Fi account to access your home network from anywhere, at any time, even from your mobile device. Easily connect new devices, set parental controls, get access to Smart Wi-Fi mobile Apps, and more.
For more information click here

- After creating the account, you will be asked to associate your Cisco Connect Cloud account to your router by entering the router password you created during setup.

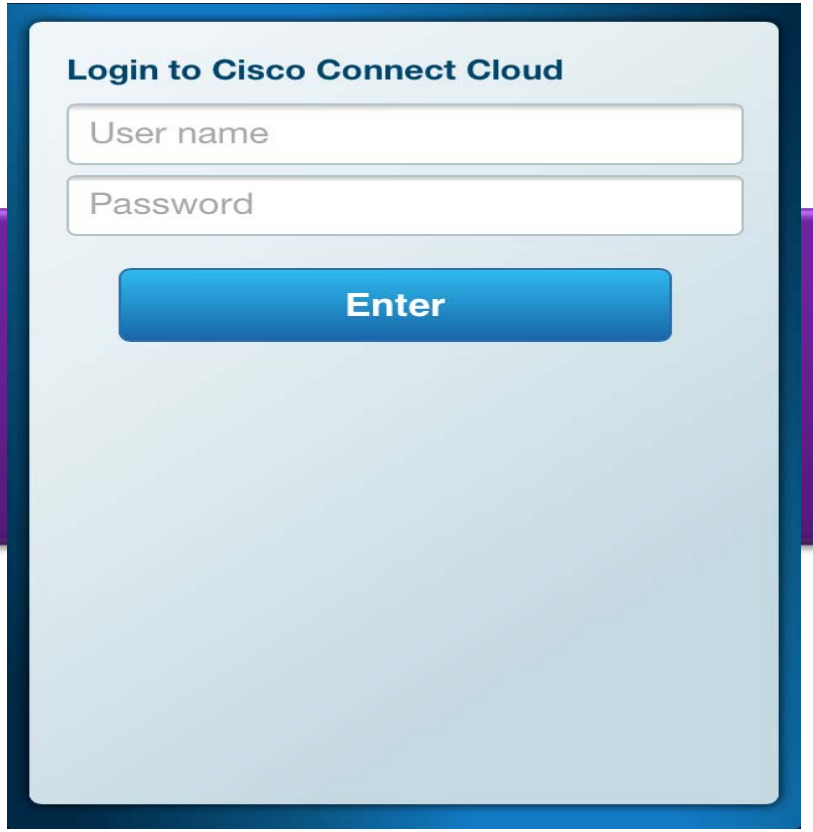
Linksys Smart Wi-Fi Account



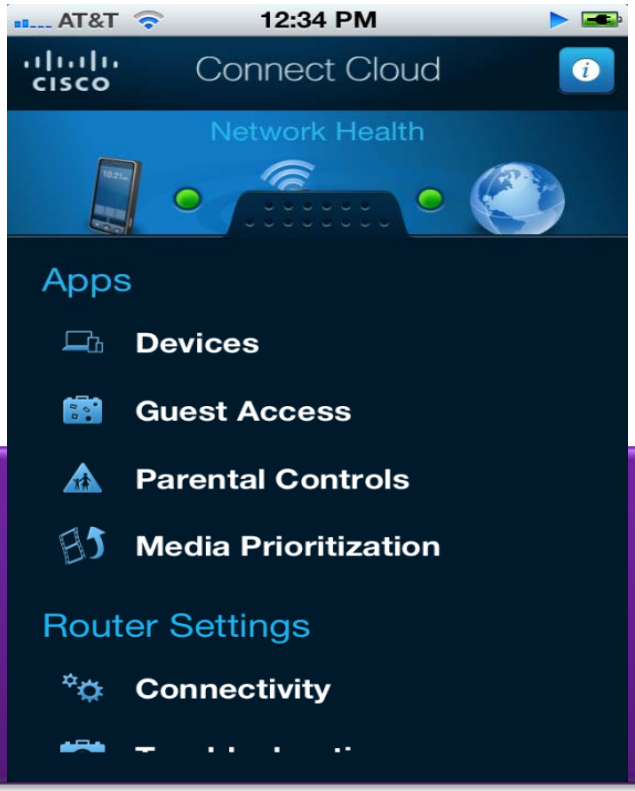
• With different Apps and Router Settings available for Cisco Connect Cloud, you can access and monitor your wireless home network settings and activities.

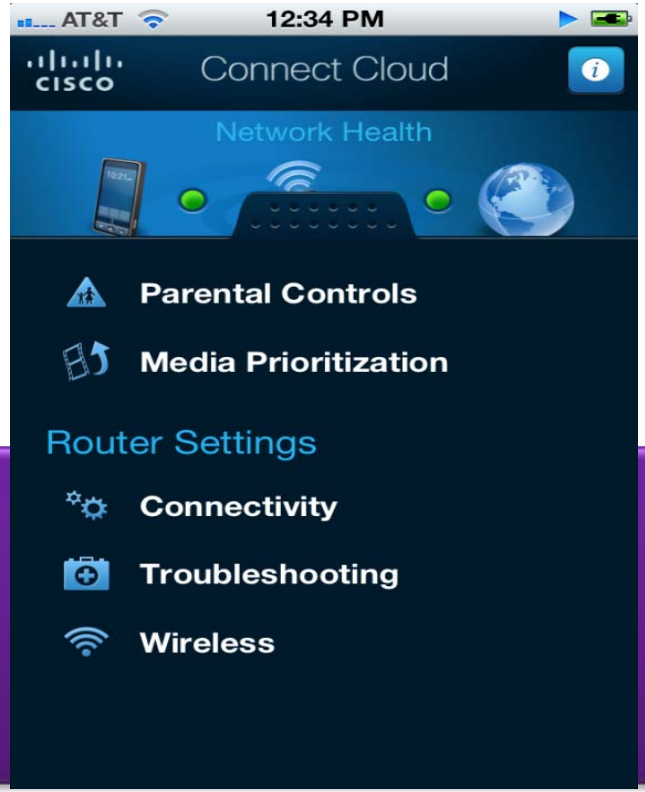
Linksys Smart Wi-Fi Mobile App

- At initial launch you will be prompted for your Linksys Smart Wi-Fi account or if you manually clicked on the Logout option



Linksys Smart Wi-Fi Mobile App

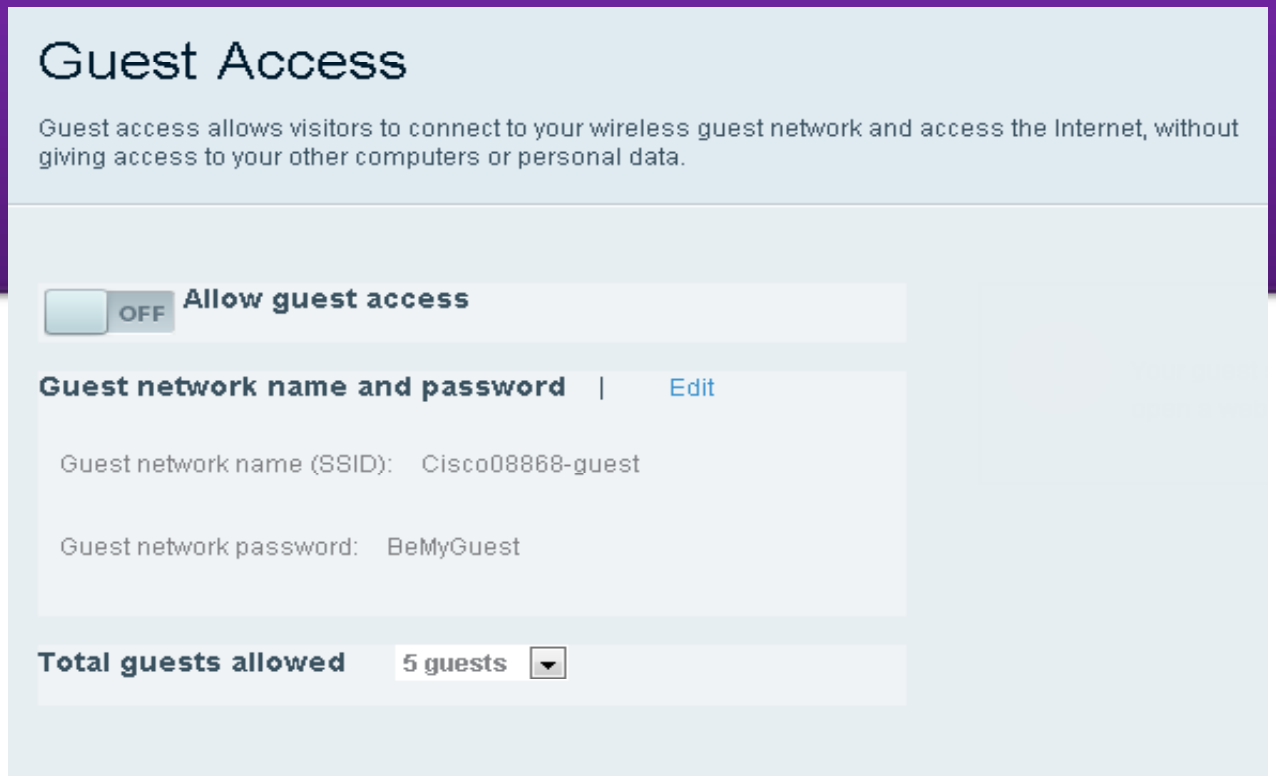




• This menu allows you to select a widget to configure the settings. Tap on the black tab again to close the menu. Scroll to the bottom to see the rest of the widgets

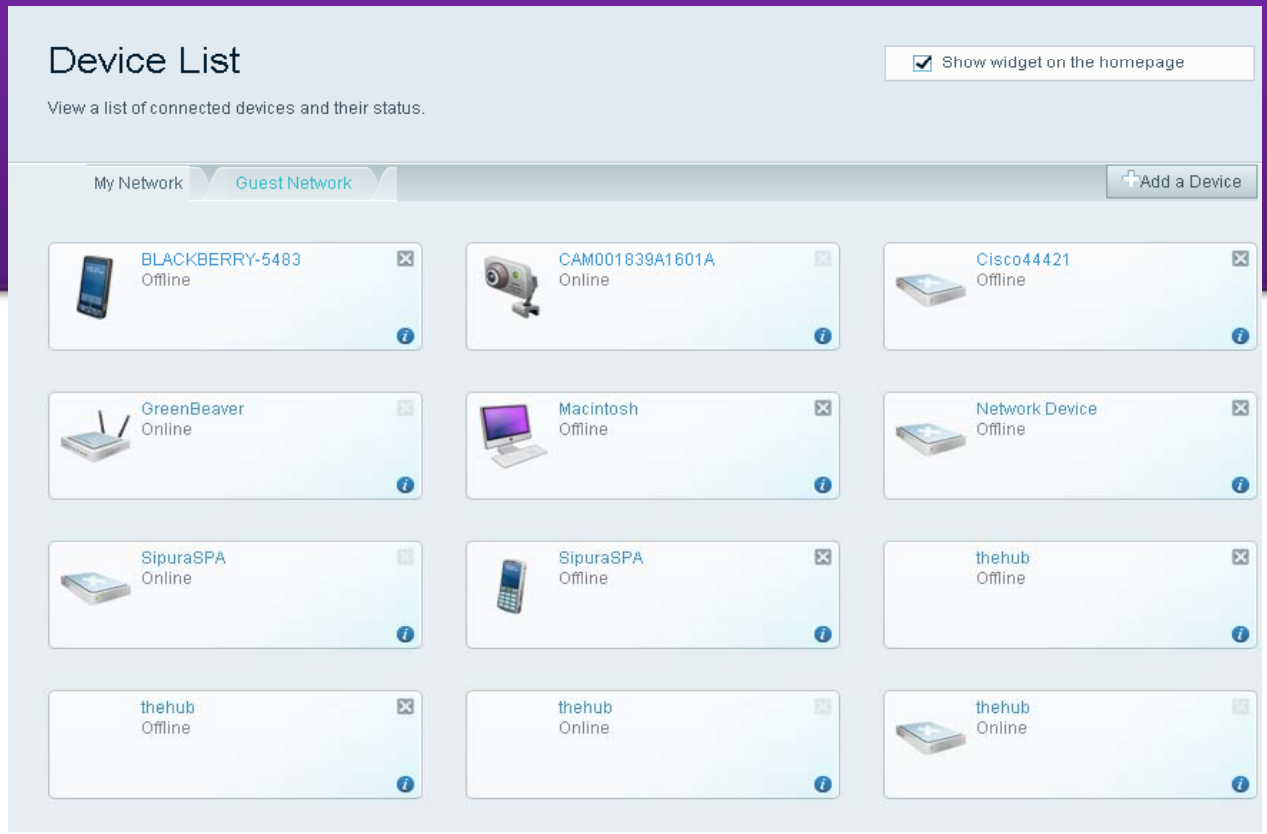
Apps: Guest Access

. Maximum guest allowed is 50.

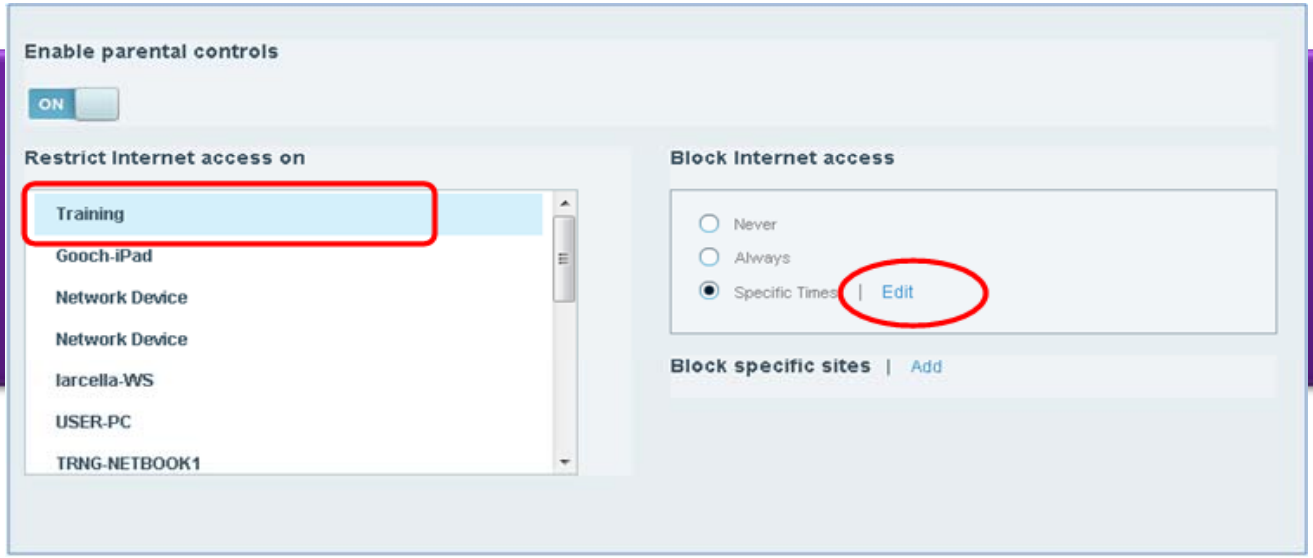

Guest Access
Guest access allows visitors to connect to your wireless guest network and access the Internet, without giving access to your other computers or personal data.
OFF
Allow guest access
Guest network name and password
Edit
Guest network name (SSID): Cisco08868-guest
Guest network password: BeMyGuest
Total guests allowed
5 guests

Apps: Device List

- The Device list is a graphical view of all your network clients, similar to Network Magic

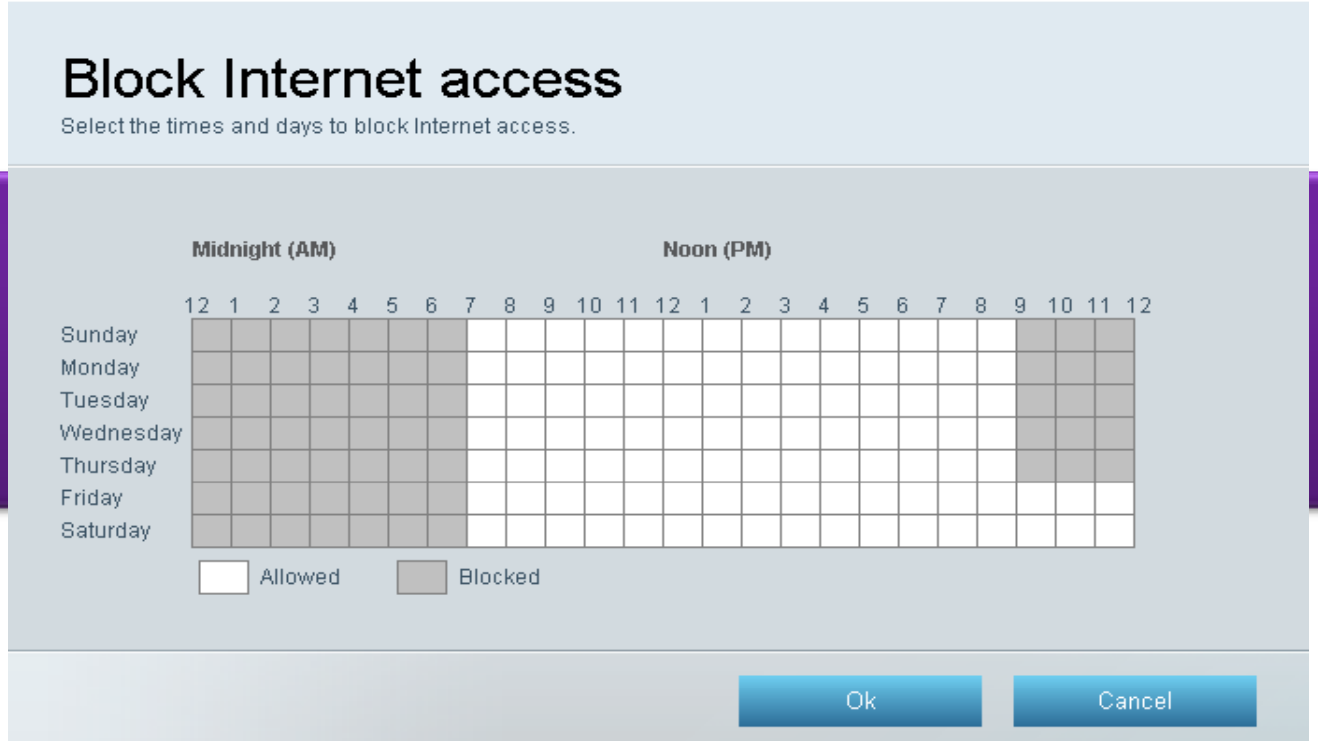


Apps: Parental Control

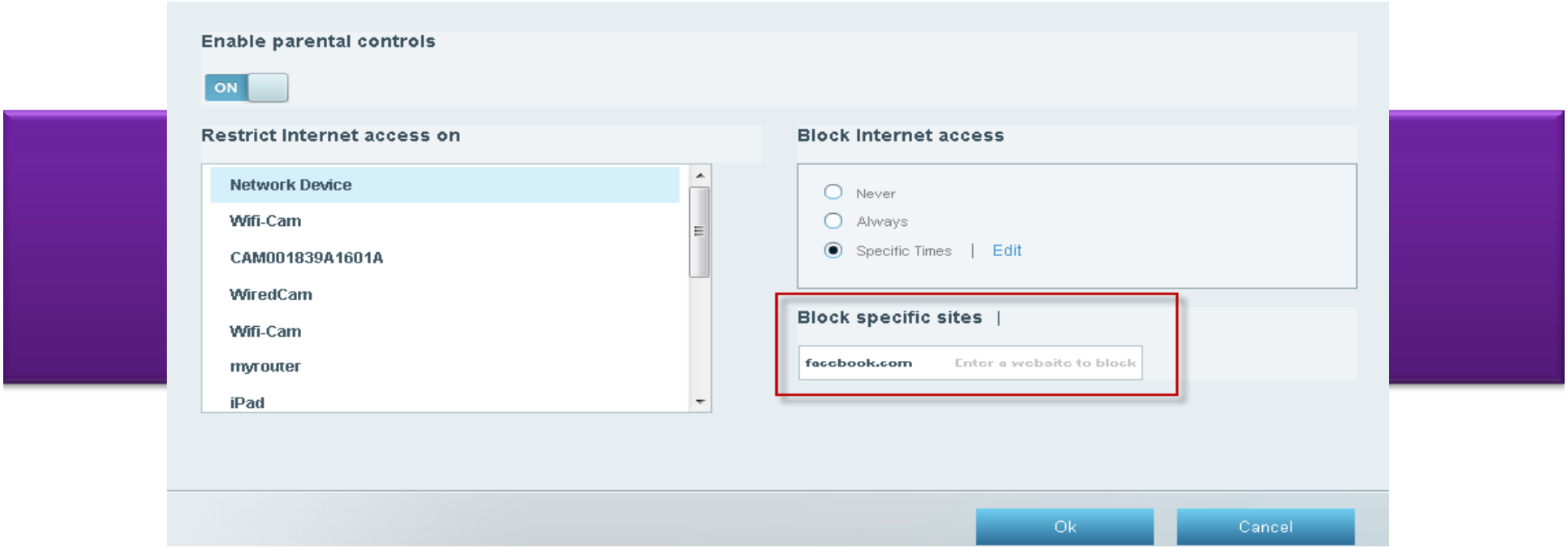


- Enable/Disable Parental Control on this screen.
- You can restrict internet access per device connected on your network.

• To select by time just click the square to block the hour (gray)



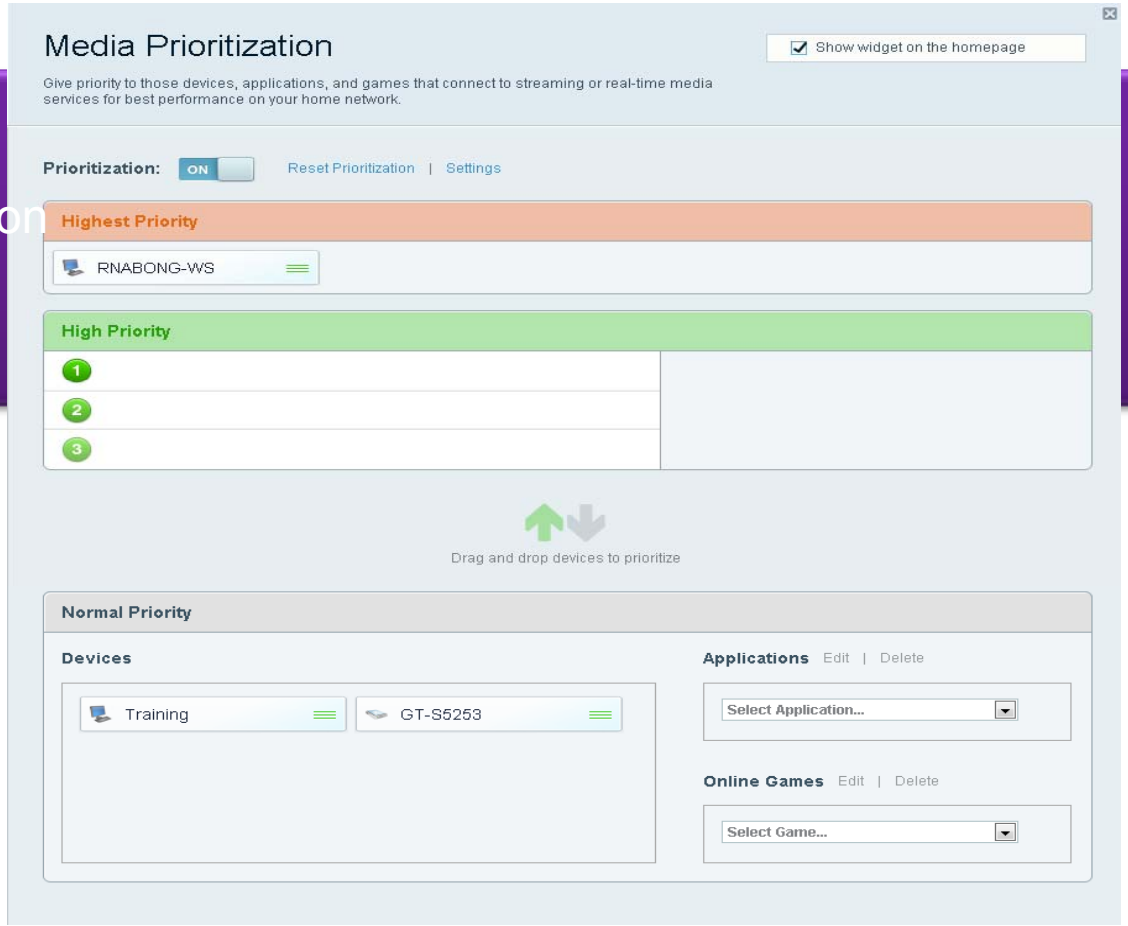
• Each square represents an hour, click the square to block (gray). Hold and drag several squares to block a range of hours

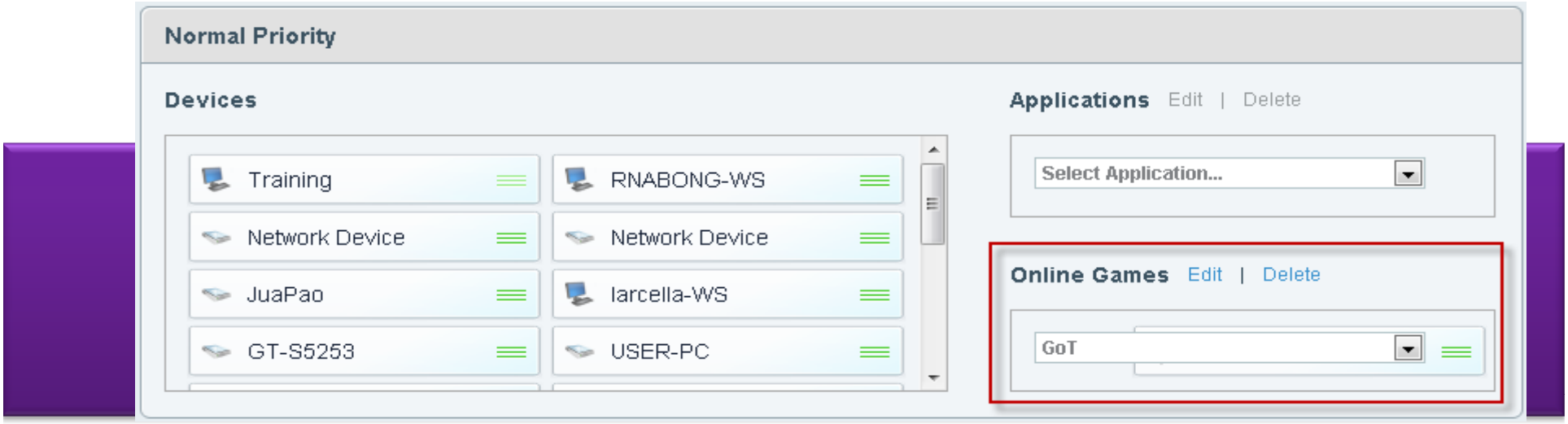


• You can also block specific sites from this screen.

• You cannot block multiple websites at a single time. You need to click ok first in order for you to add another website to the block list.

• Media Prioritization lets you decide which devices or applications get network priority bandwidth.



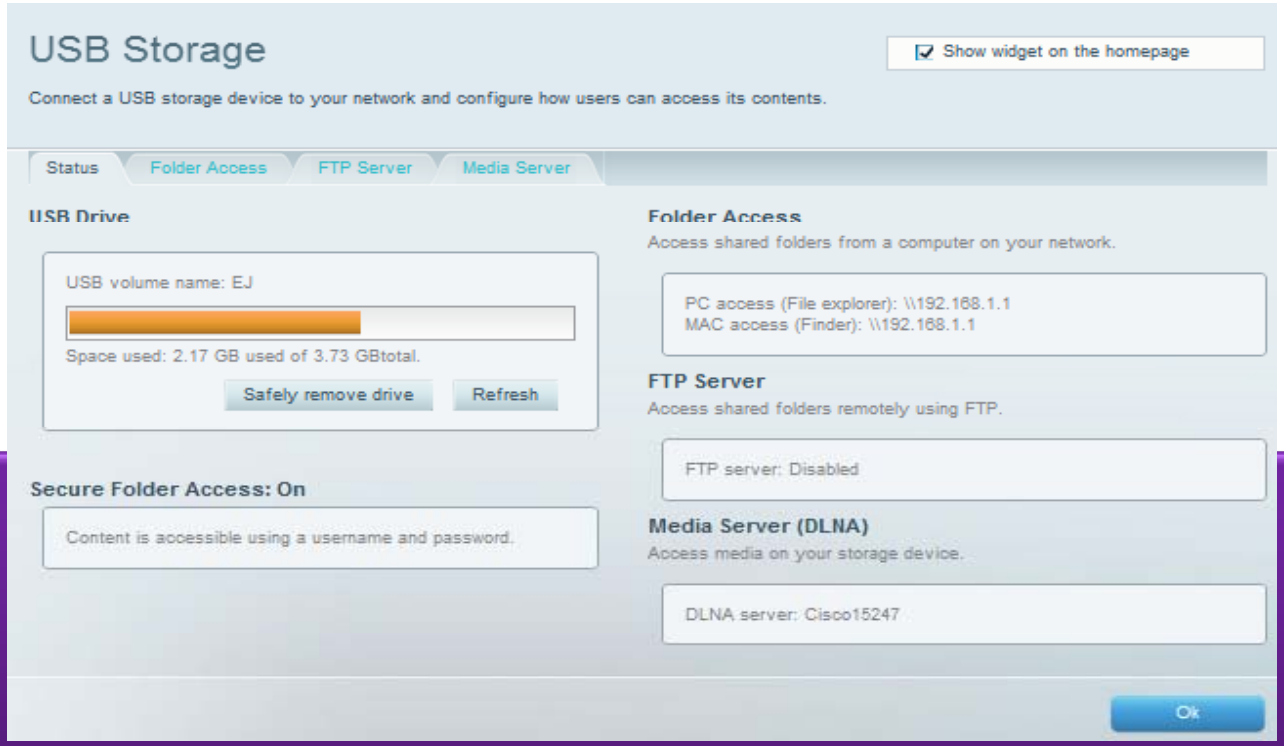


- Immediately drag and drop the game by holding down the 3 green lines next to it, to the High queue and then click OK.

Router Settings: Speed Test

- Test your broadband speed

Apps: USB Storage > Status


USB Storage
Show widget on the homepage
Connect a USB storage device to your network and configure how users can access its contents.
Status
Folder Access
FTP Server
Media Server
USB Drive
USB volume name: EJ
Space used: 2.17 GB used of 3.73 GBtotal.
Safely remove drive
Refresh
Secure Folder Access: On
Content is accessible using a username and password.
Folder Access
Access shared folders from a computer on your network.
PC access (File explorer): \\192.168.1.1
MAC access (Finder): \\192.168.1.1
FTP Server
Access shared folders remotely using FTP.
FTP server: Disabled
Media Server (DLNA)
Access media on your storage device.
DLNA server: Cisco15247
Ok

- Connect a USB storage device to your network and configure how users can access its contents.

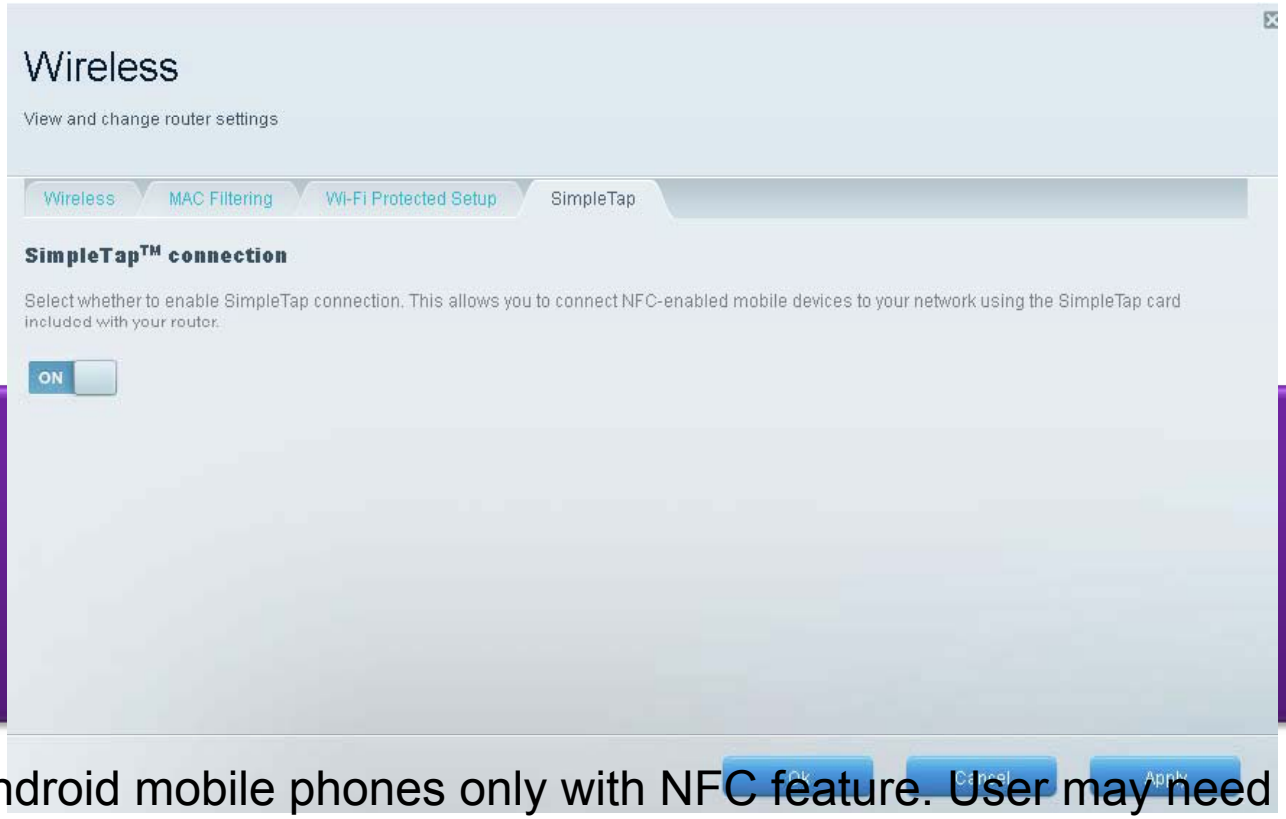
Dual USB

Status tab has a drop down menu when 2 HD are detected.

Dual-USB Support

- 2 x USB 2.0 ports
- Virtual USB support (Printer/s)
- DLNA 1.5
- Supports FAT, FAT32, NTFS, and HFS+.
- Dual USB widget when 2 HD are detected

Simple Tap



- NFC mobile devices (Android mobile phones only with NFC feature. User may need to enable this option in the Settings of their phone)
- For a list of compatible devices www.linksys.com/SimpleTap
- List of Android phones that support NFC (http://www.nfcworld.com/nfc-data/android)

VIDEO

Linksys Smart Wi-Fi Apps

Block the Bad Stuff

Easily add one of three levels of protective filtering to your wireless network with the Block the Bad Stuff app, developed for Linksys Smart Wi-Fi Router owners.

HipPlay

HipPlay is a fun and easy to use universal digital media aggregator and player. Experience digital mobility in a brand new and unique way with this app developed for Linksys Smart Wi-Fi Router owners.

NetProofer

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Device Monitr

The Device Monitr app developed for Linksys Smart Wi-Fi Router owners, monitors devices such as game consoles, iPads and PC’s and provides real time network status.

Block the Bad

Easily add one of three levels of protective filtering to your wireless network with the Block the Bad Stuff app, developed for Linksys Smart Wi-Fi Router owners.

LOADING SCREEN

SIGN INTO CISCO ROUTER

SELECTING FILTER LEVEL VIA FILTER MASHUP.
SWIPING THE WHEEL WILL MOVE THE LEVELS.
TOUCHING GREEN BUTTON WILL TURN APP ON AND OFF. OFF STATUS WILL HAVE "OFF" WHERE IT CURRENTLY SAYS "FILTER LEVEL 2"

Netproofer: The NetProofer app developed for Linksys Smart Wi-Fi Router owners empowers users to restrict the access of specific websites on their home network

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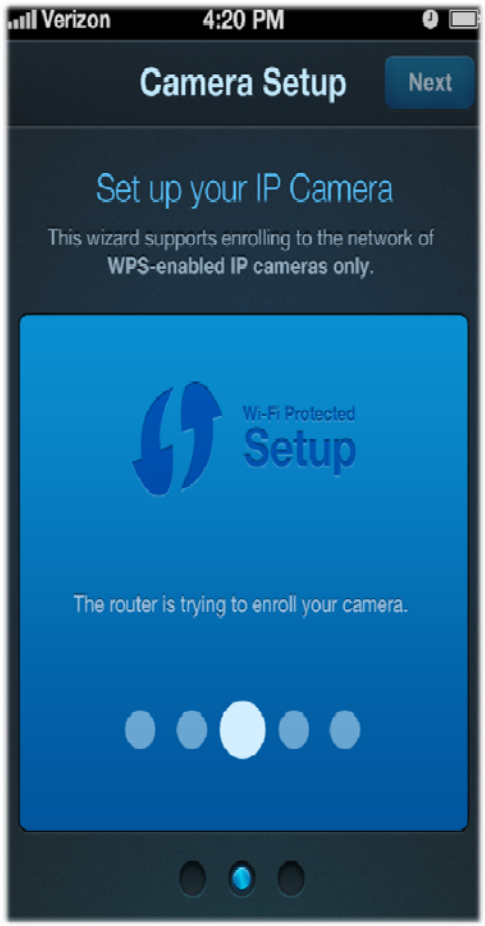
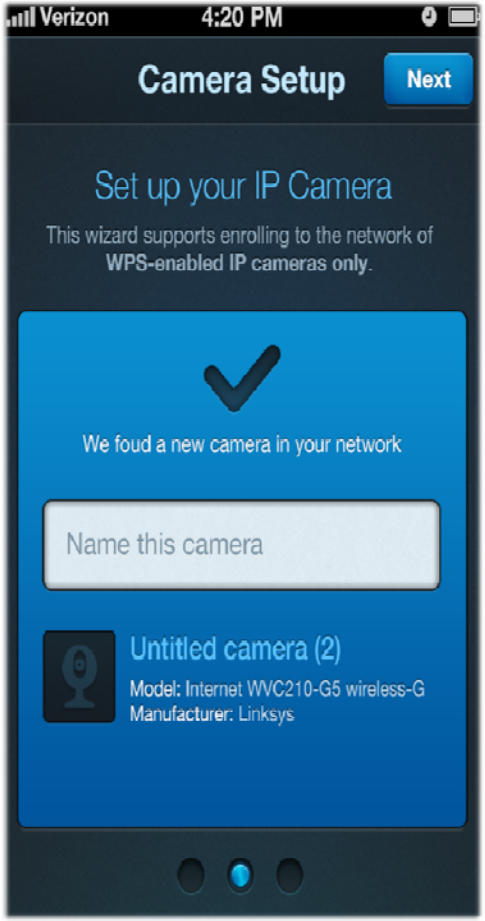
Device Monitr: The Device Monitr app developed for Linksys Smart Wi-Fi Router owners, monitors devices such as game consoles, iPads and PC's and provides real time network status.

Device Monitr

Gemini IP Camera Viewer

- No Hassle & Simple Device Setup for existing devices





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New CCC Features

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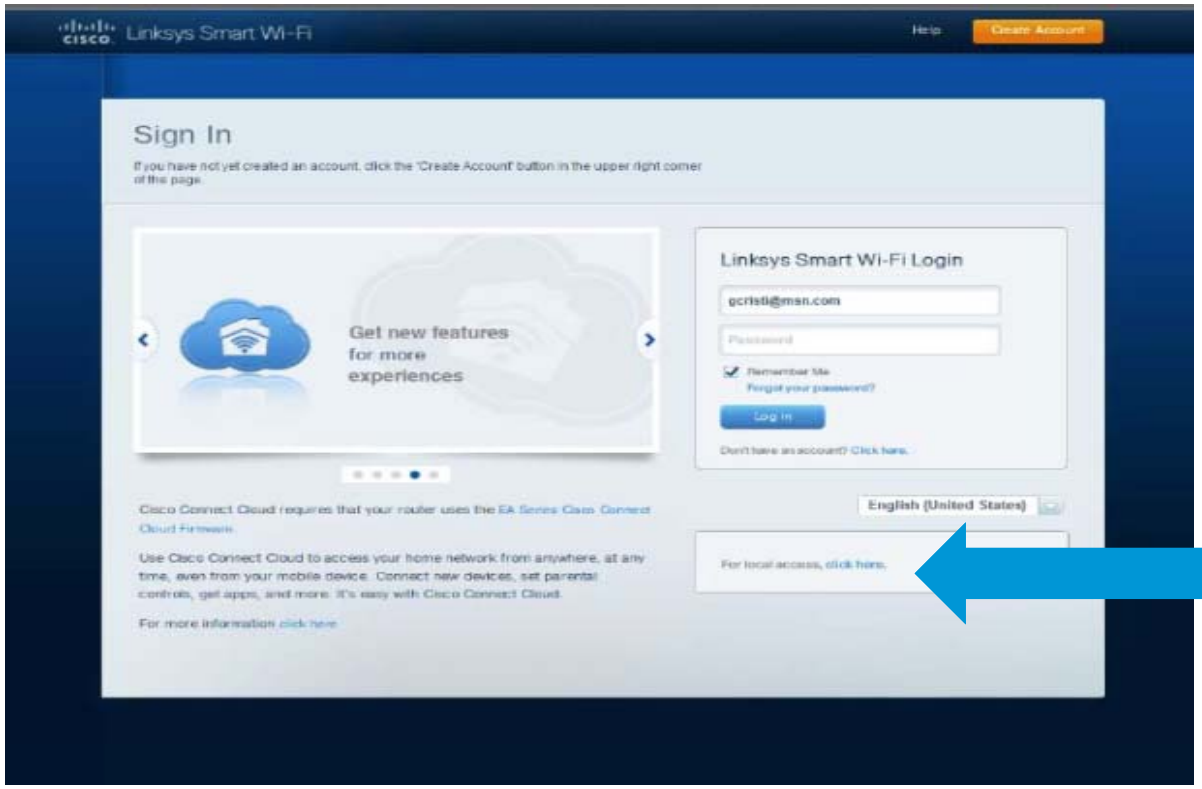
New CCC Features


Linksys Smart Wi-Fi
Help
Create Account
Sign In
If you have not yet created an account, click the 'Create Account' button in the upper right corner of the page.
Get new features for more experiences
Linksys Smart Wi-Fi Login
gcristi@msn.com
Password
Remember Me
Forgot your password?
Log In
Don't have an account? Click here.
English (United States)
Cisco Connect Cloud requires that your router uses the EA Series Cisco Connect Cloud Firmware.
Use Cisco Connect Cloud to access your home network from anywhere, at any time, even from your mobile device. Connect new devices, set parental controls, get apps, and more. It's easy with Cisco Connect Cloud.
For more information click here
For local access, click here.

1. **Local Access UI-** Customer can toggle between login with a CCC account or Local Access UI.
Local access is an option to access the full UI of router without creating a cloud account. By using the local access option customer is choosing NOT to use cloud services on the router with no remote management to the router.

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New CCC Features cont.

2. Banner color

- **Light blue banner** - Indicates user is logged in using Local Access UI

- **Dark Blue banner** - Indicates user is logged in using CCC online

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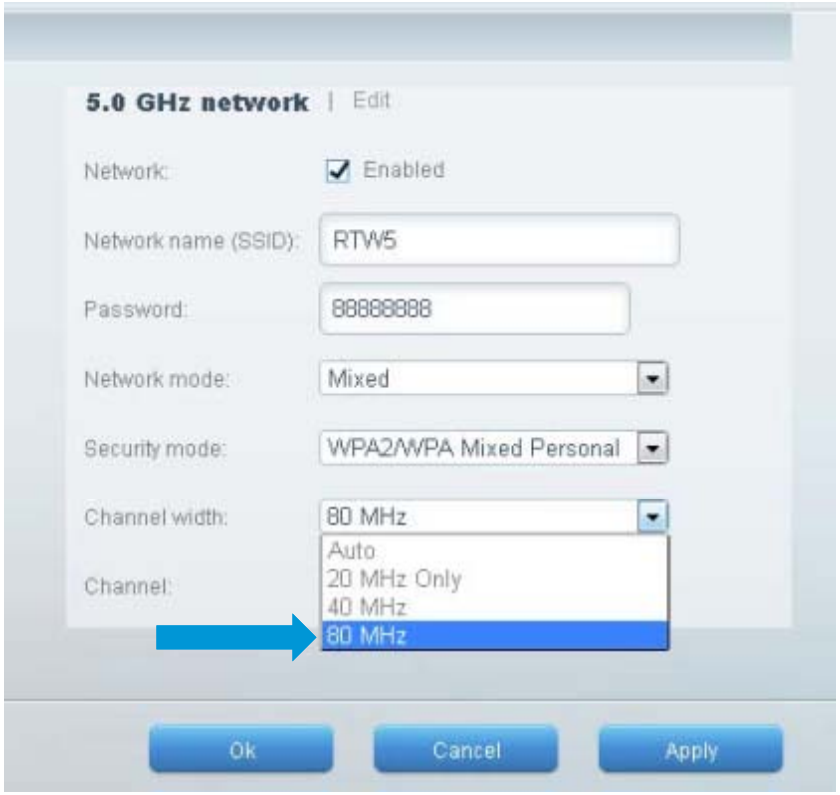
New CCC Features cont.

3. **Wireless AC-** The 5 GHz band has a new option for Network Mode (Wireless-AC Only) and a new Channel Width (80 MHz).
   To take advantage of the 802.11ac technology the client needs to support 802.11ac.



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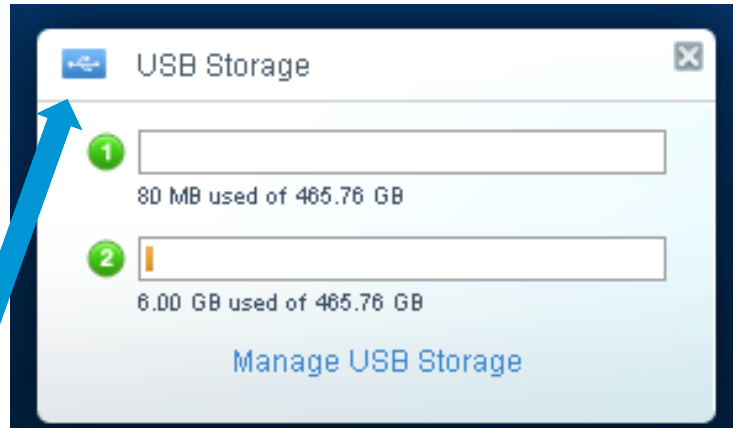
New CCC Features cont.

4. Dual-USB Support

- 2 x USB 2.0 ports
- Virtual USB support (Printer/s)
- DLNA 1.5
- Supports FAT, FAT32, NTFS, and HFS+.
- Dual USB widget when 2 HD are detected:



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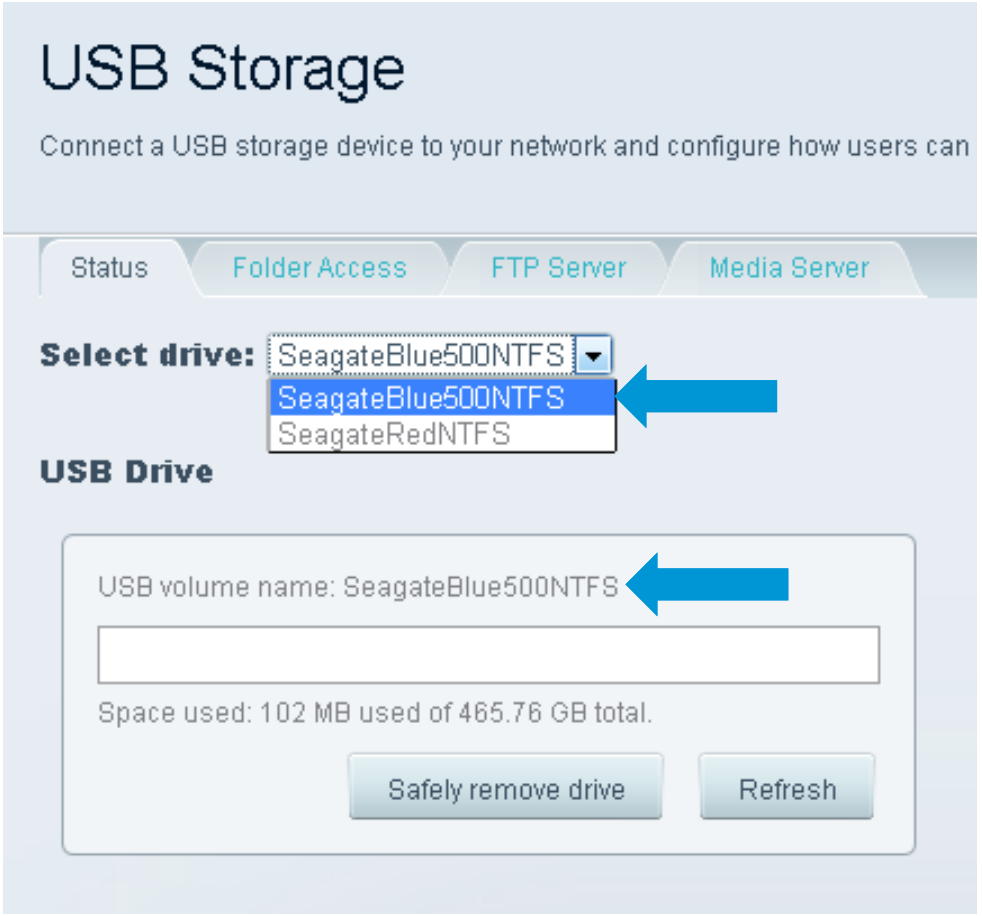
New CCC Features cont.

- Status tab has a drop down menu when 2 HD are detected.
- Select the HD to get USB drive information.



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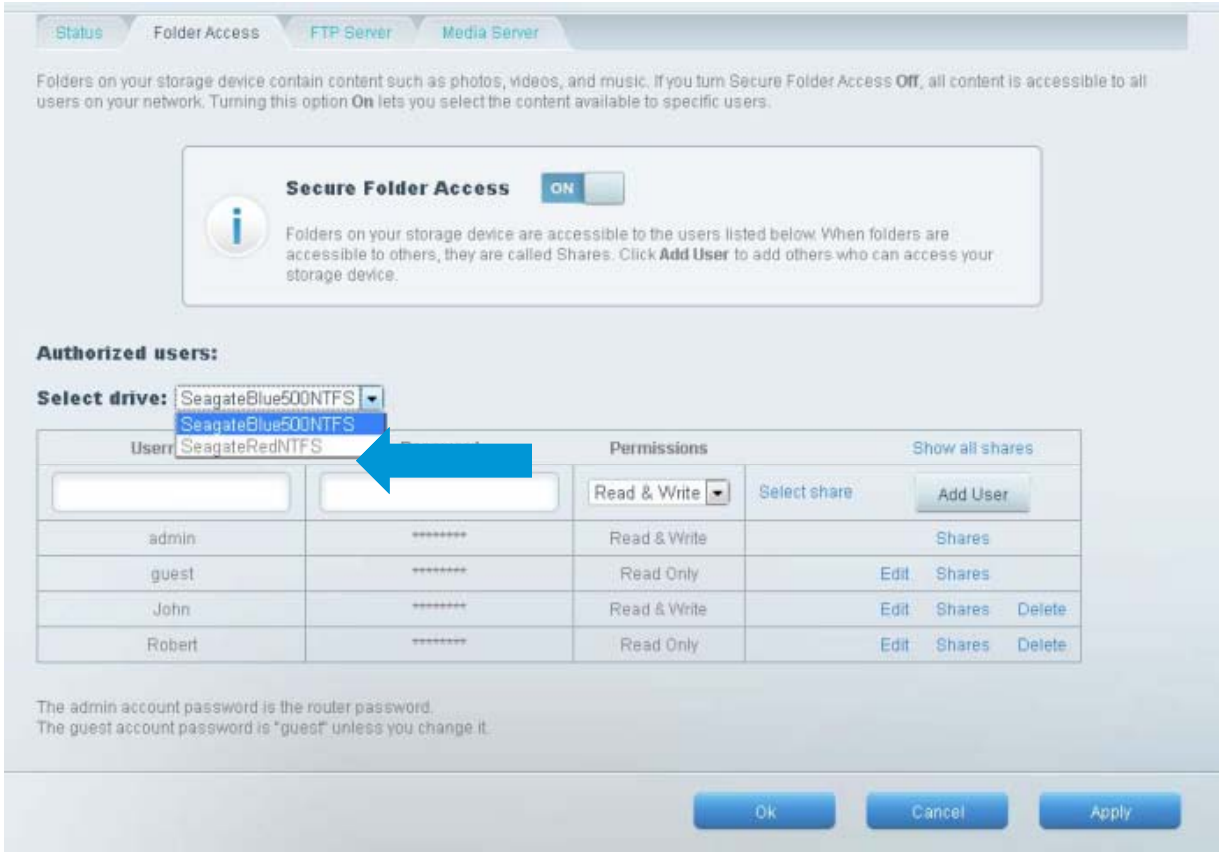
New CCC Features cont.

- Folder Access tab
- Secure Folder Access On/Off switch is global
- To configure permissions for a user for a share:
  - Create the user
  - Select a share from either one of the HD by selecting the appropriate HD from the drop down menu.



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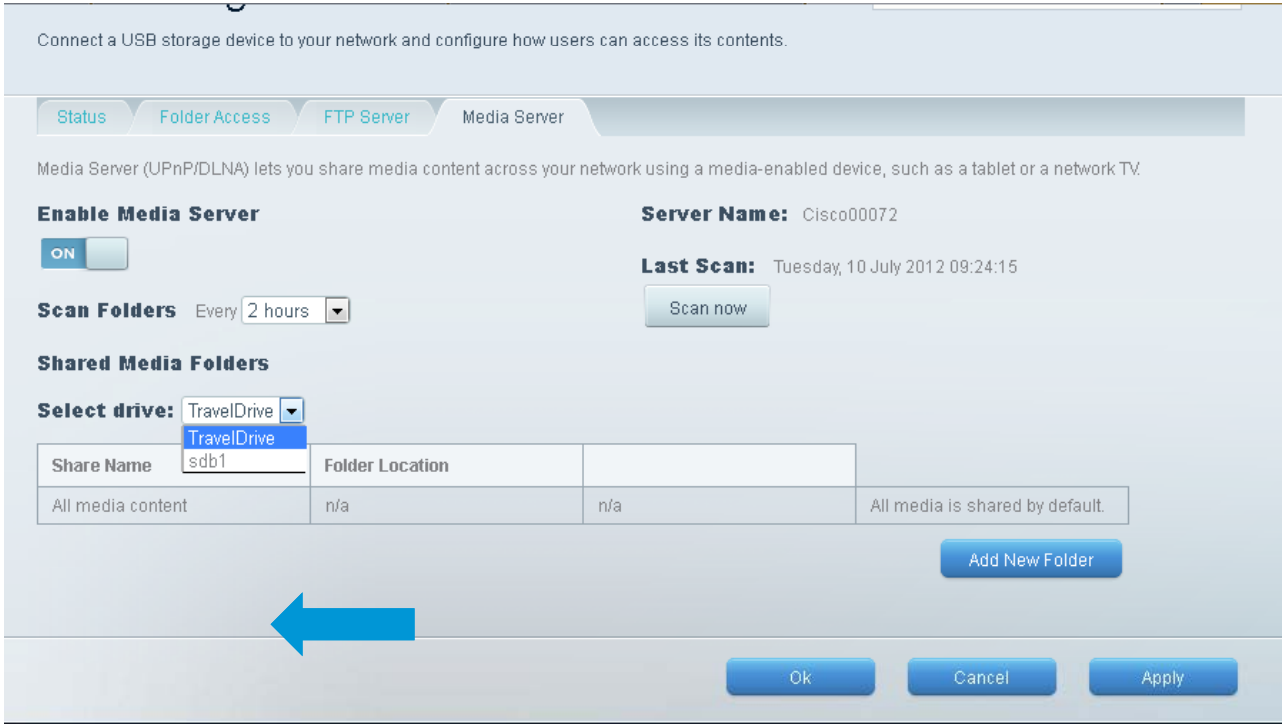
New CCC Features cont.

- FTP Server option is global (no changes)
- Media Server

  Select the appropriate drive to configure the media server shares.

  Scan Folders option is for both drives, including the Scan Now option.



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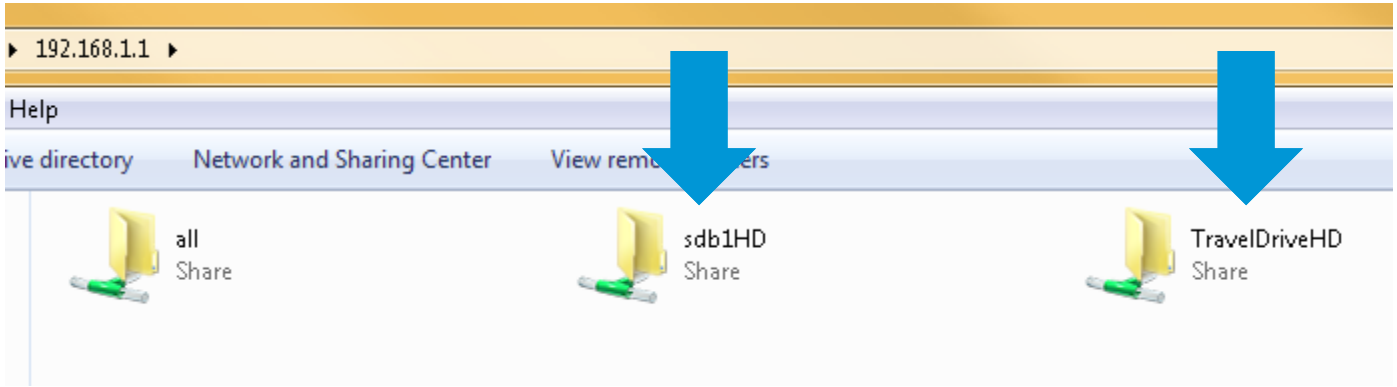
New CCC Features cont.

- Once both drives have been configured you will have access to both drives via Windows Explorer.



5. Dual USB printer

Same setup as previous EA sku's however if the user has 2 printers connected, the utility will detect 2nd printer and is configured the same way.

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New CCC Features cont.

6. SimpleTap

SimpleTap feature is for NFC supported mobile phones (currently only Android NFS phones).

This is a simpler way to connect a mobile device to the router.

The router comes with a SimpleTap card.

The card is coded at manufacturing with the hidden WI-FI credentials that is paired to the router.

The card must only be used with the router it came with otherwise the SimpleTap feature will not work (similar to how Flip TV worked).

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New CCC Features cont.

- NFC mobile devices (Android mobile phones only with NFC feature

  User may need to enable this option in the Settings of their phone)

- For a list of compatible devices

  www.linksys.com/SimpleTap

- List of Android phones that support NFC**

  http://www.nfcworld.com/nfc-data/android/

cisco
SimpleTap™
After you've set up and connected your router, use this SimpleTap™ card to connect your NFC-enabled mobile devices to your wireless network. For a list of all compatible devices you can connect using this card, visit: www.linksys.com/SimpleTap
SimpleTap™
1 Download and install the Cisco Connect Cloud mobile app to your NFC-enabled mobile device.
2 Tap this card on your mobile device to connect it to your wireless network
8000-00094A
6001-14090011R(S)
0240-00281A

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New CCC Features cont.

- The SimpleTap feature acts as a backdoor to connect to the 2.4Ghz band
  - Reduce consumer pain of recalling or interacting with passwords, PINs..etc
  - SimpleTap connects a mobile device to the 2.4 GHz radio only
  - Default security is WPA2/AES
- Initial setup uses the SimpleTap steps
  - Once a mobile device is connected, the mobile device will connect to the 2.4Ghz band.
- SimpleTap virtual access point (VAP) is a hidden SSID that can be disabled or enabled in the UI of router - “SimpleTap” tab.
- For every router before shipping a random SSID and passphrase will be generated and burned into the firmware at manufacturing.

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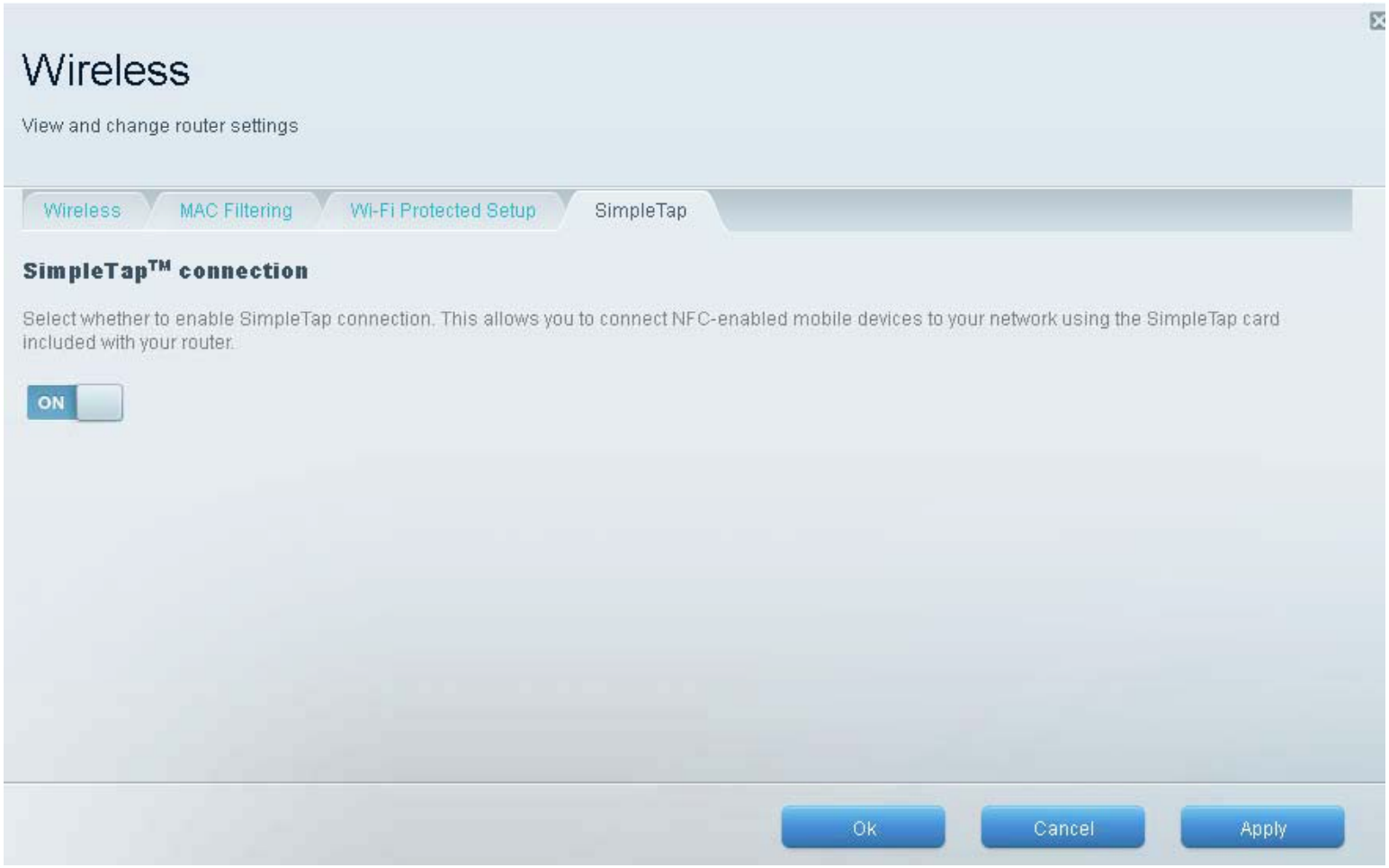
New CCC Features cont.



- This option just turns off SimpleTap, customer will never see the SSID

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New CCC Features cont.

- If the SimpleTap card is lost, the customer can still connect their mobile device the standard way by selecting a WI-FI network and entering the passphrase
- There is a QR code on the packaging which when scanned with a QR reader it will redirect to a URL to download the mobile app...

… or customer can just go to the store and download the mobile app, QR code is not required to download the app

Cisco Connect Cloud™
Access your home network anywhere through a mobile app or browser
Remote Access
Manage your network on the go
Multiple Networks
Troubleshoot family and friends' Cisco Connect networks remotely
USB Storage Access
Access your storage device locally or remotely
Guest Access
Give guests Internet access with a guest network
Speed Test
Test your Internet connection speeds
Media Prioritization
Decide what devices get the most bandwidth
Parental Controls
Create a safe Internet experience for your kids, even on-the-go
Learn more about Cisco Connect Cloud™

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Connecting an NFC mobile device with NFC card

1. Download the mobile app to your mobile phone either via the QR code or directly from store. No need to launch it.
2. Tap the card to the phone
3. Mobile app will automatically launch and notify user that the mobile device is connected to the network.
4. Once the phone is paired to the router, the phone will display that it's connected to the 2.4 GHz band, the SimpleTap setup connection acts as a backdoor for initial connection.

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In Box Materials

EA6500

- EA6500 Included
- SimpleTap Card Included
- Power Adapter 12V 3.5 A Included
- RJ45 Ethernet Cable Included
- Mini User Guide Included
- Setup CD Included
- Legal documentation (EULA/Regulatory/Warranty) Included

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Updates Summary Comparison

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Updates Summary Comparison

Updates	EA2700	EA3500	EA4500	EA6500
Opening UI by entering “myrouter.local” in the address bar of browser	Yes	Yes	Yes	Yes
Wireless Security Tab has been removed. Security Mode and Passphrase are now in the Basic Wireless Settings Tab	Yes	Yes	Yes	Yes
Will support up to 50 Guest Users when configured via the UI	Yes	Yes	Yes	Yes
NFC	No	No	No	Yes

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Updates Summary Comparison

Updates	EA2700	EA3500	EA4500	EA6500
Access Restrictions tab now only supports Parental Controls style filtering	Yes	Yes	Yes	Yes
Auto Firmware Update feature and the ability to restore to a previously loaded firmware	Yes	Yes	Yes	Yes
Cisco Connection Center version	1.4l	1.4l	1.4l	Cisco Connect Cloud
App Enabled Router	Yes	Yes	Yes	Yes

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Thank you.

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